ACE MEC
LG Industrial Systems

LG Air Circuit Breakers

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LG Industrial Systems

ISO 14001, ISO 9001

ACE MEC

Air Circuit Breakers

Ace-MEC Series

Air Circuit Breakers

It is customer's ACB that considers a customer's convenience in the use through the increase in the reliance of the operation characteristic by digital type of trip relay and the easy checking of load condition and fixed current value by LCD.

LG "ATS with ACBs" interlocks the ACBs by mechanically and electronically.
It is more reliable in switching operation and faster than existing ATS.
The switching time is adjustable.

∗Application : The places which require stable power supply (Hospital, Communication facility, Computer room, Pump room, Office building)
∗Comparing with the existing ATS, the LG "ATS with ACBs" has high breaking capacity and protects the loads from the over-current and ground gault

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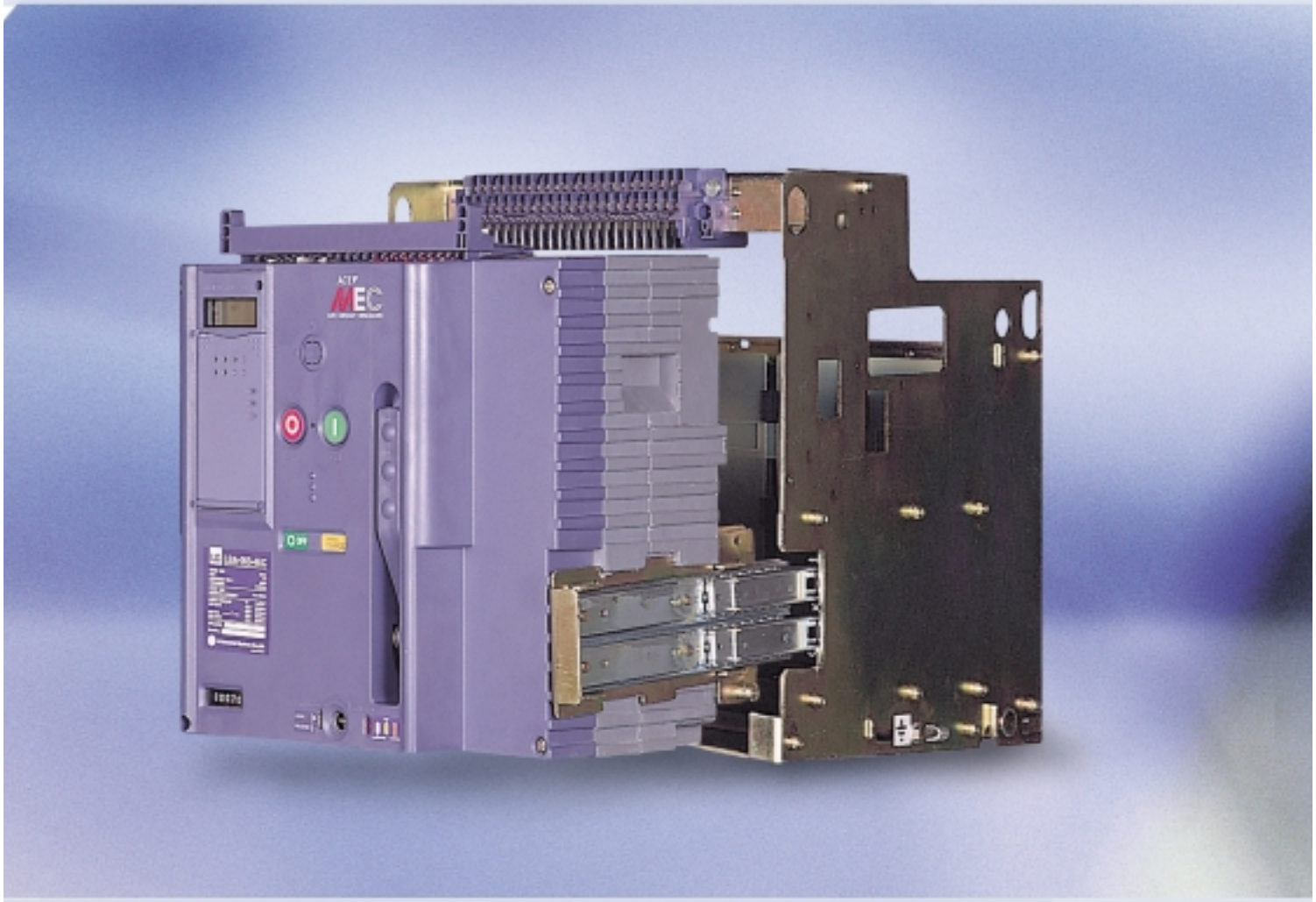

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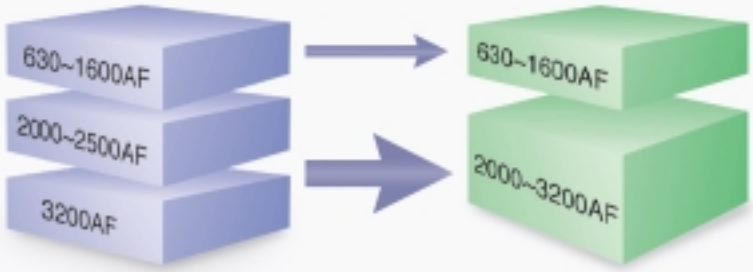
Characteristics

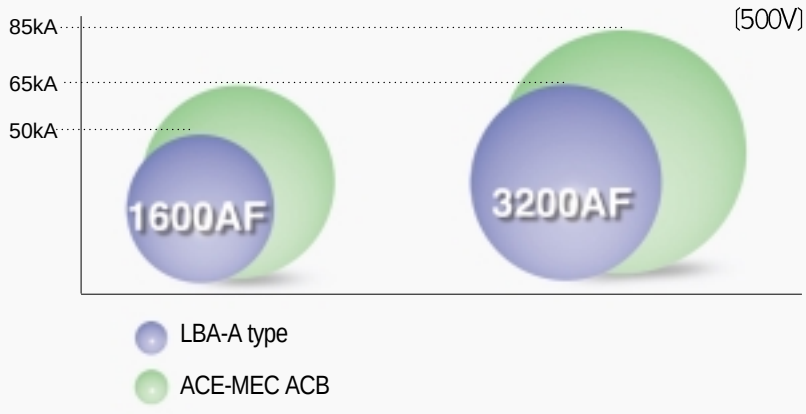
Small and Light In compare with the existing model,the size and weight are reduced less than 60%.(3pole basis)

630~1600A 2000~2500A 3200A

Simplified external dimensions: 3 Types to 2 Types



Improved breaking capacity



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Safety and Convenience

- OCR terminals are located in front
- Modulized mechanical part and accessories for easy maintenance and inspection
- Improved Draw-out rail for easy draw-out
- Minimized Arc space
- Molded frame
- The reverse connection of power source and load part is available but please use the normal connection for the safety in maintenance and inspection

High functional digital type trip relay.

- Easy inspection by the LCD
  - Load current value
  - Setting values of each trip characteristics
  - Fault current(Max) value
  - Tripping time
- Self-diagnosis function
- Self-test function
  - It is available to check whether OCR is operated normaly or not by applying external power
- Pre-alarm function
- Contact output of the each tripping cause and LED indication
- OCR alarm contact (AL, INO)

Variety of accessories

◀Optional accessories▶

- Interlock device
  Mechanical interlock, interlock control unit, electric interlock unit, auxiliary interlock unit
- UVT, UVT controller : Standard(INO INC)
  - Instantaneous type(under 0.15sec)
  - Delay type(over 0.5sec)
- Condensor tripping device(CTD)
- Counter(5digit)
- ON/OFF button lock
- Miss insertion prevent device(MIP)
- Cell switch
- Shorting b-contact
- Safety shutter lock(STL)

◀Standard attachment of draw-out type▶

- Position indicator

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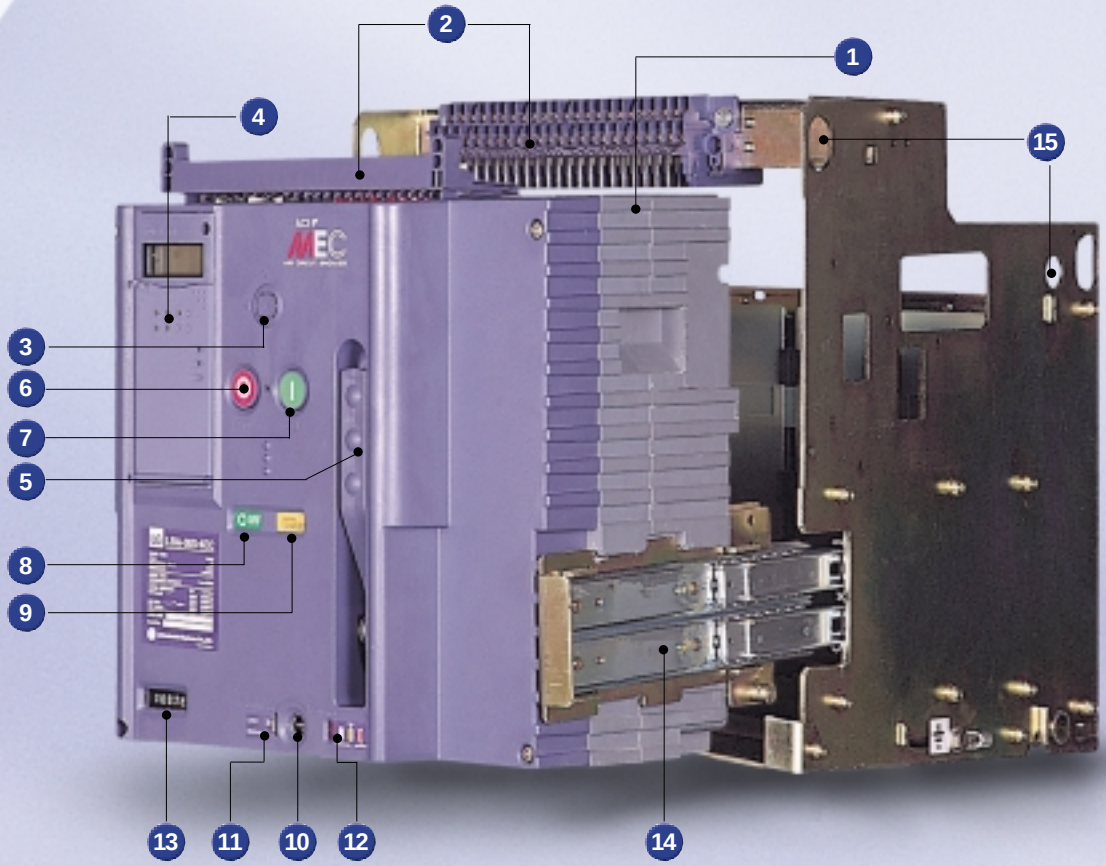
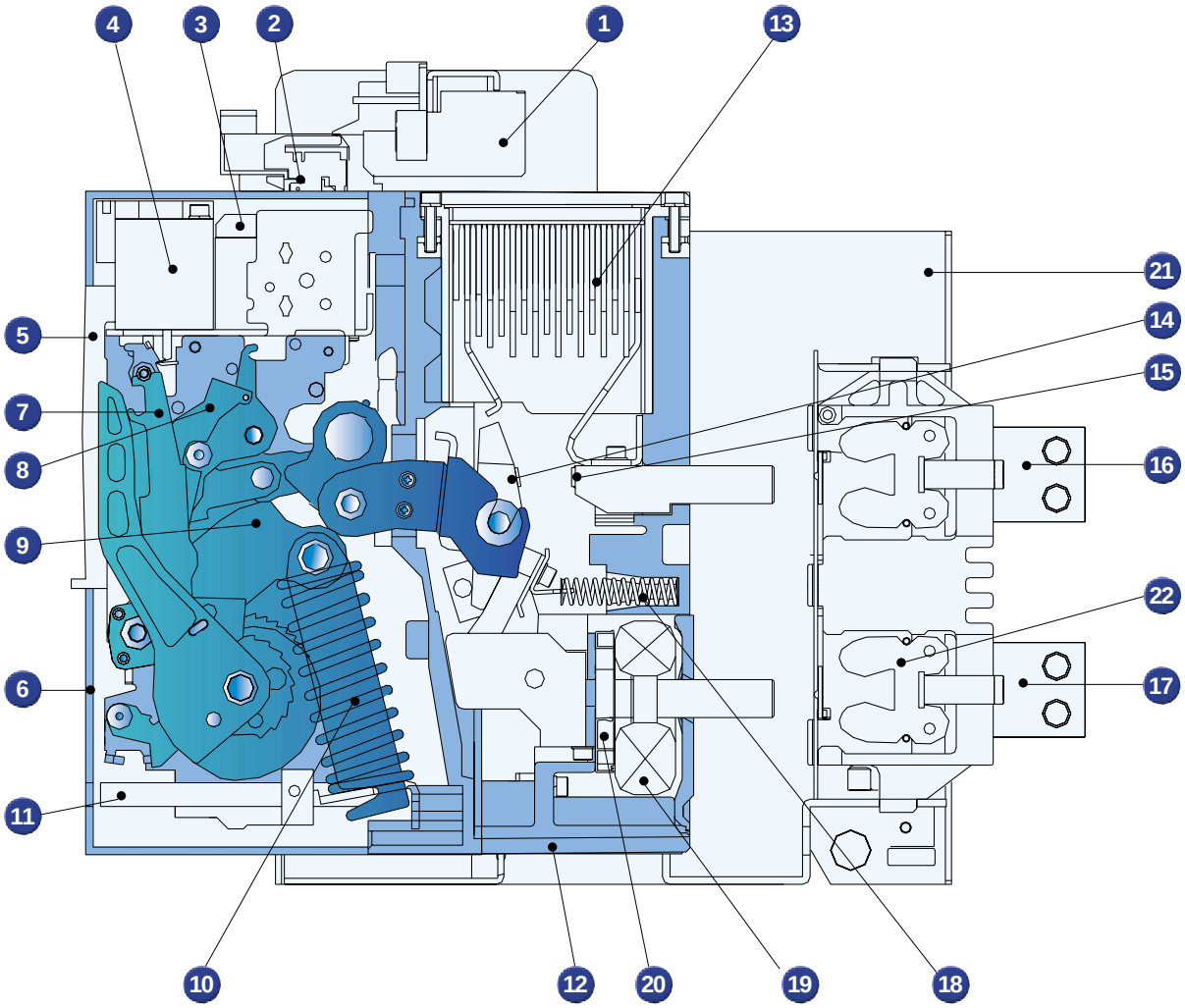
Features and internal structure



1 Arc extinguishing chamber
2 Control circuit terminal
3 Key lock
4 Electronic trip relay
5 Charging handle
6 OFF button
7 ON button
8 ON/ OFF indicator
9 Charging indicator
10 Aperture for the draw-out handle
11 Pad lock
12 Position indicator
13 Counter
14 Extension rail
15 Lifting hook hole



1 Control circuit terminal block
2 Control terminal
3 Auxiliary switches
4 Shunt trip device, closing coil
5 Electronic trip relay
6 Front cover
7 Closing mechanism
8 Tripping mechanism
9 Charging mechanism
10 Closing spring
11 Draw-out mechanism
12 Insulated base
13 Arc extinguishing chamber
14 Main movable contact
15 Main fixed contact
16 Main conductor of line part
17 Main conductor of load part
18 Contact spring
19 CT for power
20 Coil for current detection
21 Cradle
22 Main circuit junction

Ratings

Ace-MEC Air circuit breaker

TYPE					LBA-06C	LBA-08C	LBA-10C	LBA-13C
Rated current ($I_{n\,max}$)	(A)			at 40℃	630	800	1000	1250
Rated operating voltage	(U_e)			(V)	690	690	690	690
Rated insulation voltage	(U_i)			(V)	1000	1000	1000	1000
Frequency Notes 2)	(Hz)				50/60	50/60	50/60	50/60
Number of poles	(P)				3,4	3,4	3,4	3,4
Setting current (I_h)	(A)	Control trip relay (… x $I_{n\,Max}$)			1.0 -0.9 -0.8 -0.7 -0.6 -0.5 -0.4(7steps)			
Rated current of neutral pole	(A)				630	800	1000	1250
Rated breaking capacity (I_{cu}) (Sym)	(kA)	KS C 8325	AC	660V	50	50	50	50
				600V	50	50	50	50
				500V Under	65	65	65	65
			DC	250V Notes 3)	25	25	25	25
		IEC 60947-2	AC	690V	50	50	50	50
				600V	50	50	50	50
				500V Under	65	65	65	65
Rated service breaking capacity (I_{cs})	(kA)			… % x I_{cu}	100	100	100	100
Rated making capacity (I_{cm}) (peak)	(kA)	KS C 8325	AC	660V	105	105	105	105
				600V	105	105	105	105
				500V Under	143	143	143	143
		IEC 60947-2	AC	690V	105	105	105	105
				600V	105	105	105	105
				500V Under	143	143	143	143
Rated Short-time capacity (I_{cw})	(kA)			1 sec	65	65	65	65
				2 sec Notes 3)	40	40	40	40
				3 sec Notes 3)	30	30	30	30
Operating time (t)	(ms)			Maximum total breaking time	40	40	40	40
				Closing Time	80	80	80	80
Life cycle	ACB	(time)	Mechanical	Without maintenance	10000	10000	10000	10000
				With maintenance	20000	20000	20000	20000
			Electrical	Without maintenance	3000	3000	3000	3000
				With maintenance	5000	5000	5000	5000
	ATS with ACBs Notes 4)	(time)	Mechanical	Without maintenance	10000	10000	10000	10000
			Electrical	Without maintenance	3000	3000	3000	3000
Weight (3P/4P)		(kg)	Draw-out type	Main Body (with cradle) Motor charging type	66/80	67/81	67/81	67/81
				Main Body (with cradle) Manual charging type	63/77	64/78	64/78	64/78
				Cradle only	26/30	26/30	26/30	26/30
			Fixed type	Motor charging type	43/53	44/54	44/54	44/54
				Manual charging type	40/50	41/51	41/51	41/51
Bus-bar		Connection type		Horizontal type	Standard	Standard	Standard	Standard
				Vertical type Notes 5)	Option	Option	Option	Option
Closing type				Motor charging type	Standard	Standard	Standard	Standard
				Manual charging type	Option	Option	Option	Option
External dimension	Draw-out Type	(mm)	H:435, D:376	W (3P/4P)	338/423	338/423	338/423	338/423
	Fixed type	(mm)	H:410, D:285	W (3P/4P)	340/425	340/425	340/425	340/425

Notes 1) Rated current of IEC standard
Notes 2) Trip relay is divided into 50Hz and 60Hz. Please be careful when you order it.
Notes 3) Reference rating
Notes 4) Ace-MEC ACB with interlock device can be a substitute for ATS (For order, refer to page 44)
Notes 5) For mainbody, only horizontal type is available. For cradle, vertical type is optional.

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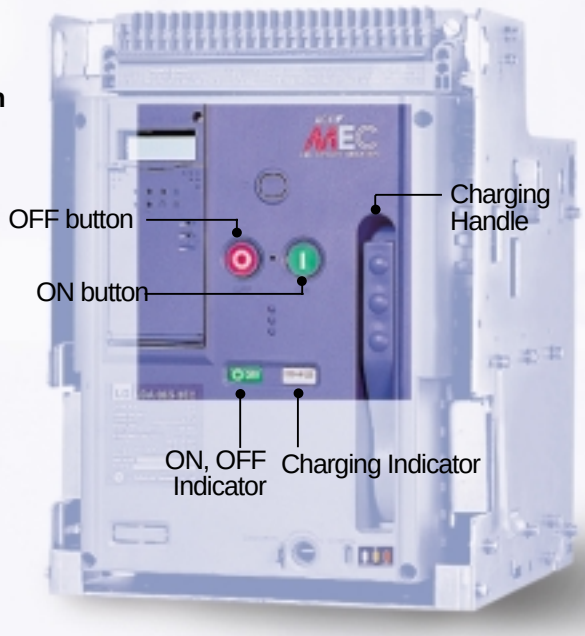
Type					LBA-16C	LBA-20C	LBA-25C	LBA-32C
Rated current ($I_{n\,max}$)	(A)			at 40℃	1600	2000	2500	3150(3200)Note1)
Rated operating voltage	(U_e)			(V)	690	690	690	690
Rated insulation voltage	(U_i)			(V)	1000	1000	1000	1000
Frequency Notes2)	(Hz)				50/60	50/60	50/60	50/60
Number of poles	(P)				3,4	3,4	3,4	3,4
Setting current (I_n)	(A) Control trip relay (… x $I_{n\,Max}$)				1.0-0.9-0.8-0.7-0.6-0.5-0.4(7 steps)			
Rated current of neutral pol	(A)				1600	2000	2500	3200
Rated breaking capacity (I_{CU}) (Sym)	(kA)	KS C 8325	AC	660V	50	65	65	65
				600V	50	65	65	65
				500V Under	65	85	85	85
			DC	250V Notes3)	25	32	32	32
		IEC 60947-2	AC	690V	50	65	65	65
				600V	50	65	65	65
				500V Under	65	85	85	85
Rated service breaking capacity (I_{CS})	(kA)			… % x I_{CU}	100	100	100	100
Rated making capacity (I_{cm}) (peak)	(kA)	KS C 8325	AC	660V	105	143	143	143
				600V	105	143	143	143
				500V Under	143	187	187	187
		IEC 60947-2	AC	690V	105	143	143	143
				600V	105	143	143	143
				500V Under	143	187	187	187
Rated Short-time capacity (I_{cw})	(kA)			1 sec	65	65	65	65
				2 sec Notes3)	60	65	65	65
				3 sec Notes3)	50	65	65	65
Operating time (t)	(ms)			Maximum total breaking time	40	40	40	40
				Closing Time	80	80	80	80
Life cycle ACB	(time)	Mechanical		Without maintenance	10000	10000	10000	10000
				With maintenance	20000	20000	20000	20000
		Electrical		Without maintenance	3000	3000	3000	3000
				With maintenance	5000	5000	5000	5000
ATS with ACBs Notes4)	(time)	Mechanical		Without maintenance	10000	10000	10000	10000
		Electrical		Without maintenance	3000	3000	3000	3000
Weight (3P/4P)	(kg)	Draw-out type	Main Body (with cradle)	Motor charging type	67/81	95/116	96/117	98/119
				Manual charging type	64/78	92/113	93/114	95/116
			Cradle only		26/30	35/43	35/43	36/44
		Fixed type		Motor charging type	44/54	63/75	64/76	66/78
				Manual charging type	41/51	60/72	61/73	63/75
Bus-bar	Connection type			Horizontal type	Standard	Standard	Standard	Standard
				Vertical type Notes5)	Option	Option	Option	Option
Closing type				Motor charging type	Standard	Standard	Standard	Standard
				Manual charging type	Option	Option	Option	Option
Outline dimension	Draw-out Type	(mm)	H:435, D:376	W (3P/4P)	338/423	473/603	473/603	473/603
	Fixed type	(mm)	H:410, D:285	W (3P/4P)	340/425	475/605	475/605	475/605

Charging method

Manual charging type

The closing coil is charged by manual charging handle. For closing, first charge the spring by using the charging handle, and then press the close button (I, ON) for closing, the open button(O, OFF) for opening

- When closing spring is completely charged, charge indicator indicate "Charge"
- It is mechanically locked not to press the close button(I,ON) and open button(O,OFF) simultaneously
- Contact condition of the main circuit is shown on the (O,OFF), (I,ON) indicator.



Motor charging type

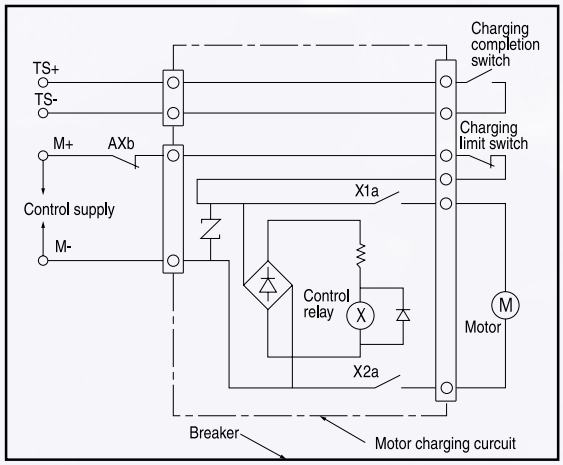
The closing spring is charged by a motor ON charging method or OFF charging method is available selectively.

- OFF charging method : When the breaker opened, the closing spring is charged automatically. It can change to ON charging method by removing b(Axb) contact like beside circuit diagram
- ON charging method : The closing spring is charged automatically when the breaker is closed. It can change to OFF charging method by using b(Axb) contact There is a contact to indicate the charging completion(TS+,TS-). Since the contact signal of charging completion switch is connected to the external terminal, It is easy to construct a circuit(ex. Automatic closing circuit) by using that contact

- Manual charging is also available
- With the breaker closed(I,ON), only manual charging is possible(motor charging cannot be performed)
- With the open button(O,OFF) pressed, closing cannot be performed(electrical and mechanical lock)
- When OFF Lock device is in use, closing cannot be worked.(electrical and mechanical lock)
- Opening should follow at least one second after completion of charging
- Pumping prevent circuit is included with the closing coil(electrical lock)
- Please note that pumping prevent circuit can be reset when the voltage of input signal drops

Voltage	Reset voltage
AC	Rated Voltage 85% Under
DC	Rated Voltage 85% Under

- Motor charging circuit



Notes 1) Since charging completion contact(TS+,TS-) terminal is for contact output power should not be allowed.
Notes 2) Charging Completion contact capacity is equal to that high of capacity of auxiliary contact in 23 page.

- Motor Ratings

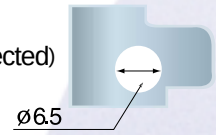
Rated Voltage		Inrush current (Peak value)(A)	Steady current (A)	Power consumption (W)	Charging time (sec)
AC/DC	110	7	3.5	242	5 Under
50/60Hz	220	7	3.5	264	
DC125	7	3.5	242		

Notes 1) The range of operating voltage:85~110%

Auxiliary devices

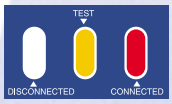
❶ Pad lock(PL)

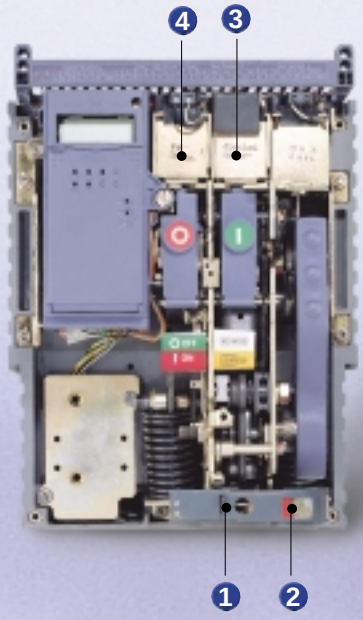
To fix a ACB into a position (Dis-connected,Test, Connected)
∗Standard offer in the draw-out type



❷ Position Indicator

To insicate the position (Dis-connected, Test, Connected) of a ACB
∗Standard offer in the draw-out type





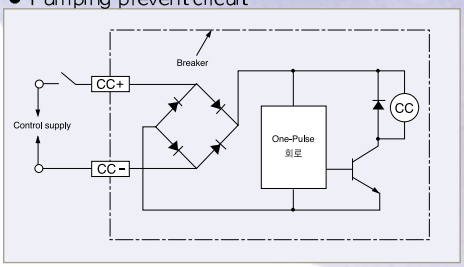
❸ Closing Coil (CC)

- To close the breaker by remote control
- The coil only operates when the power is supplied continuously over 100ms
- Power should be supplied seperately from the motor charging power.
- Electric pumping prevent circuit is built in it.

Rated voltage(V)		Operational voltage(A)	Inrush current	Steady current(A)	Closing time(sec)
AC/DC 50/60Hz	110	94~ 121	2	1	0.08 Under
	220	187~ 242	3	1.3	
DC	125	106~ 138	2.3	1	

Notes 1) Closing time is from coil excitation to contact closing
Notes 2) Steady current is the value at maximum rated voltage
Notes 3) Please be careful that the pumping prevention circuit is reset when its voltage is under 85% of the rated voltage
Notes 4) The extent of operation voltage is 85~110% of the rated voltage

● Pumping prevent circuit



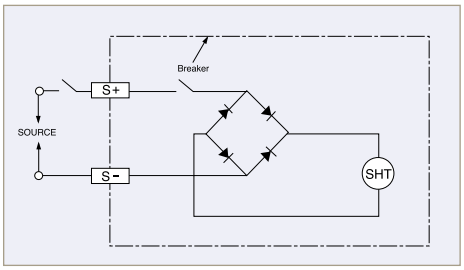
❹ Shunt coil(SHT)

- To open the breaker by remote control
- Use an auxiliary contact(INO) to prevent coil burning
- When the control power is 'off' at the ACB is 'ON' state, the ACB remains 'ON'

Rated voltage(V)		Operational voltage(A)	Inrush current	Steady current(A)	Closing time(sec)
AC/DC 50/60Hz	110	77~ 121	2	1	0.04Under
	220	154~ 242	3	1.3	
DC	125	88~ 138	2.3	1	

Notes 1)The extent of operation voltage is 70~110% of the rated voltage.

● Trip coil circuit



OCR Alarm contact

- OCR alarm contact is fundamentally installed in only ACB with trip relay. When the ACB is tripped by the OCR operation, electrical signal flows through the OCR alarm contact for remote supervisory(INO)
- OCR alarm contact is a momentary operation type (less than 15ms), please construct the magnetic maintenance circuit

● Operating condition of contact

Condition of circuit breaker	cause of trip	condition of "a" contact.
TRIP	Long-time delay trip, Short-time delay trip,Instantaneous-time delay trip,Groun fault trip	ON
	Trip button, Shunt trip coil(SHT),Undervoltage trip(UVT)	OFF
ON		-
OFF		-

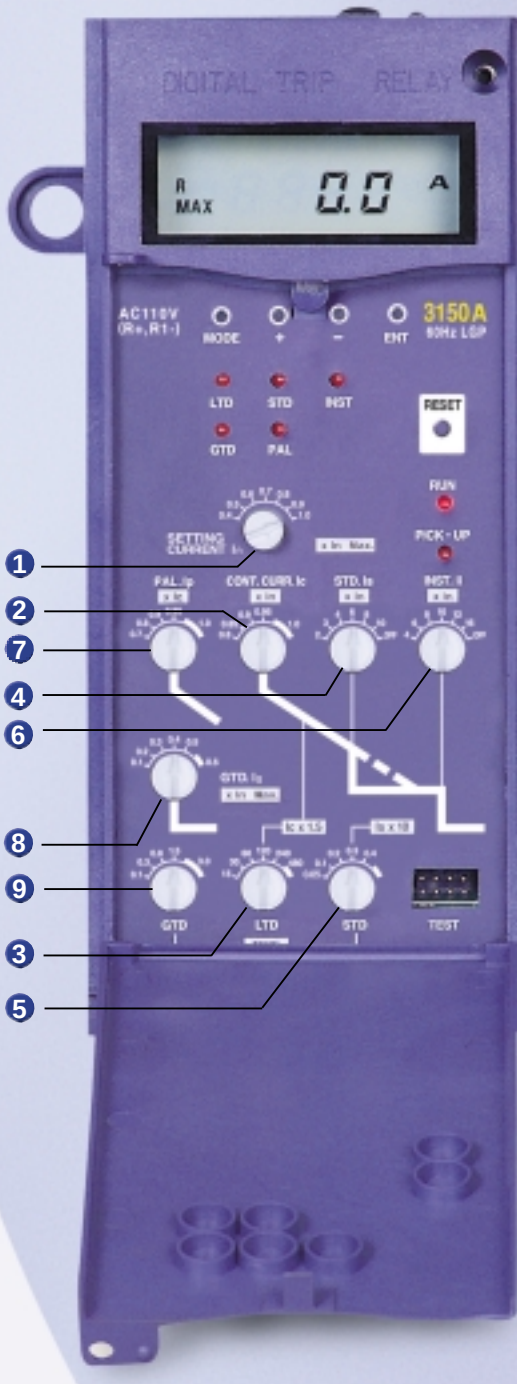
● Contact capacity

Type		Capacity
Ratings	AC	250V 5A
	DC	30V 5A
Rated current		5A
Maximum contact voltage	AC	380V
	DC	125V
Maximum contact current		5A
Minimum applicable load	DC	5V 10mA

Electronic trip relay

External configuration

No	The name of Knob	Mode	Setting step
1	Setting Current	I_n	(0.4-0.5-0.6-0.7-0.8-0.9-1.0) X In Max If it is over the setting value, "Pick-up" LED is turned 'on'
2	Rated continuous current	I_c	(0.8 - 0.85 - 0.9 - 0.95 -1.0) ×In
3	Long-time delay tripping time	LTD	15 - 30 - 60 -120 - 240 - 480 sec
4	Short-time delay tripping current	I_s	(2-3-4-6-8-10-OFF) X In If it is over the setting value, "STD" LED is turned 'on'
5	Short-time delay tripping time	STD	0.05 - 0.1- 0.2 - 0.3 - 0.4 - 0.5 sec
6	Instantaneous-time delay tripping current	I_i	(4-6-8-10-12-16-OFF) X In If it is over the setting value, "INST" LED is turned 'on'
7	Pre-Alarm	I_p	(0.7-0.8-0.9-0.95-1.0) X Ic If it is over the setting value, "PAL" LED is turned 'on'
8	Ground fault current	I_g	(0.1-0.2-0.3-0.4-0.5-0.6) X In Max If it is over the setting value, "GTD" LED is turned 'on'
9	Ground fault time	GTD	0.1 - 0.3 - 0.8 -1.5 - 3.0 sec



LED of the trip indicator and contact

LED	Contact	Kinds of tripping characteristics
LTD	T_1	Long-time delay tripping indicator
STD	T_2	Short-time delay tripping indicator
INST	T_3	Instantaneous-time delay tripping indicator
GTD	T_4	Ground fault tipping indicator
PAL	T_5	Pre-alarm indicator
RUN	-	When the breaker closed(I,ON), "RUN" LED turn on and off continuously
PICK UP	-	-Over than 105% of the setting current(In) : LED turn on and off -Over than 120% of the setting current(In) : LED turn off

Formation of output terminal

Type of contact	Mark of contact
AL -	AL -
AL+	AL+
AC COM	R+
AC220V	R_2 -
Pre-Alarm	T_5
AC110V	R_1-
Ground fault	T_4
contact COM	T_0
Instantaneous	T_3
Long-time	T_2-
Short-time	T_1-

Note) Only AC power can be used for input power to OCR

Button operating procedures & explanation

operating characteristics of trip			Self-diagnosis check enforcement			Indication of self-diagnosis and load condition		
Button operating	LCD Indicate	Explanation	Button operating order	LCD Indicate	Explanation	Button operating order	LCD Indicate	Explanation
Press the MODE button one time	In 630.0A SET	To indicate setting current(In)	Press the "MODE" button one time	In 630.0A SET	To indicate setting current(In)	Press the "MODE" button 4 times	noEr	To indicate the result of self-diagnosis - noEr : No error - Err-1 : MTD coil does not exist - Err-2 : Program error - Err-4 : Configuration resister error - Err-8 : Watch dog error
Press the "+" button	15.0S SET LTD	To indicate long-time delay tripping time(LTD)	Press the "MODE" button	No Trip 630.0kA TEST	To indicate the value of No trip (self-diagnosis mode)			
Press the "+" button	Ic 630.0A SET	To indicate continuous current(IC)	Press the "+" button	No Trip 1.20kA TEST	To set the value of No trip			
Press the "+" button	Ip 630.0A SET	To indicates pre-alarm current(Ip)	Press the "MODE" button	Trip 1.20kA TEST	To set the value of trip	Press the "MODE" button	R 500A	To indicate maximum current among the phase of R, S, T, N
Press the "+" button	Is 20.00kA SET	To indicate short-time delay tripping current(In)	Press the "ENT" button	Trip Ip In 1.20kA TEST	To do self-diagnosis test(Ip, In, TEST letter turn on and off)	Press the "+" button	S 498A	To indicate opreational current of the phase of R-S-T-N in order by pressing "+" button
Press the "+" button	0.3S SET STD	To indicate short-time delay tripping time		Trip In 6.68S TEST	-After tripping, indicate the operating time of trip characteristics ("PAL" "LTD" LED turn on) - After 15~20sec, it changes to self-diagnosis display mode automatically			
Press the "+" button	Inst 30.00kA SET	To indicate intantaneous-time delay tripping current						
Press the "+" button	Ig 63.0A SET	To indicate ground fault tripping current						
Press the "+" button	0.3S SET GTD	To indicate ground fault tripping time	Press the "RESET" button	Trip In 6.68S TEST	To reset "PAL" "LTD" LED			

Note) If "-" button pressed, the characteristics of trip displayed in the reversed order

The way to check tripping time

	LCD Indicate	Button operating order	LCD Indicate	Button operating order	LCD Indicate	Initialization	Remark
Long-time delay trip	Trip Ic R 3.38kA	Press the "-" button	Trip Ic R 1.1S	Press the "+" button	Trip Ic R 3.38kA	• LCD : Press the "ENT" button • LED :Press the "RESET" button	- "PAL" "LTD" LED turn on - To indicate maximum current among the phase of R,S,T
Short-time delay trip	Trip Is R 3.38kA	Press the "-" button	Trip Is R 0.1S	Press the "+" button	Trip Is R 3.38kA		- "STD" LED turn on - To indicate maximum current among the phase of R,S,T
Instantaneous time delay trip	Trip Inst R >>>>	Press the "-" button	Trip Inst R 0.0S SET	Press the "+" button	Trip Inst R >>>>		- "INST" LED turn on - Instantaneous trip time is faster than LCD display time. So, it is not available to display the values.
Ground fault trip	Trip Ig N 299A	Press the "-" button	Trip Ig R 0.1S	Press the "+" button	Trip Ig N 299A		- "GTD" LED turn on

Operating characteristics of trip relay

✻Without ground fault trip unit

Classification				Types and ratings of trip relays	
Type	60Hz		LCD & LED Type	LSO	LPO
			LED Type	-	SPO
	50Hz		LCD & LED Type	LSH	LPH
			LED Type	-	SPH
Operating characteristics	Long-time delay (L)			■	■
	Short-time delay (S)			■	■
	Instantaneous time delay (I)			■	■
	Ground fault (G)			-	-
	Pre-Alarm(P)			-	■
Setting current	(A)		$I_n = \cdots \times I_{n\,Max}$	0.4-0.5-0.6-0.7-0.8-0.9-1.0	0.4-0.5-0.6-0.7-0.8-0.9-1.0
Continuous current	(A)		$I_c = \cdots \times I_n$	0.8-0.85-0.9-0.95-1.0	0.8-0.85-0.9-0.95-1.0
Long-time delay(L)	Trip current (A)		$I_L = \cdots \times I_c$	1.5	1.5
(Error tolerance : ±10%)	Trip time (sec)		LTD	15-30-60-120-240-480	15-30-60-120-240-480
Short-time delay(S)	Trip current (A)		$I_s = \cdots \times I_n$	2-3-4-6-8-10-OFF	2-3-4-6-8-10-OFF
(Error tolerance : ±10%)	Trip time (sec)		STD	0.0-0.1-0.2-0.3-0.4-0.5	0.0-0.1-0.2-0.3-0.4-0.5
Instantaneous time delay(I)	Trip current (A)		$I_i = \cdots \times I_n$	4-6-8-10-12-16-OFF	4-6-8-10-12-16-OFF
(Error tolerance : ±10%)	Trip time (sec)		INST	0.01 under	0.01 under
Ground fault(G)	Trip current (A)		$I_g = \cdots \times I_{n\,Max}$	-	-
(Error tolerance : ±10%)	Trip time (sec)		GTD	-	-
Pre-Alarm(P)	Trip current (A)		$I_p = \cdots \times I_c$	-	0.7-0.8-0.9-0.95-1.0
(Error tolerance : ±10%)	Trip time (sec)		PAL = ··· x LTD	-	0.5 × Setting value

Power consumption of Trip Relay	
AC 110~220V	5VA

*With ground fault trip unit

Classification			Types and ratings of trip relays	
Type	60Hz	LCD & LED Type	LGT	LGP
		LED Type	SGT	SGP
	50Hz	LCD & LED Type	LGH	LTH
		LED Type	SGH	STH
Operating characteristics	Long-time delay (L)		■	■
	Short-time delay (L)		■	■
	Instantaneous time delay (I)		■	■
	Ground fault (G)		■	■
	Pre-Alarm(P)		-	■
Setting current	(A)	I_n = ···x $I_{n\,Max}$	0.4-0.5-0.6-0.7-0.8-0.9-1.0	0.4-0.5-0.6-0.7-0.8-0.9-1.0
Continuous current	(A)	I_c = ···x I_n	0.8-0.85-0.9-0.95-1.0	0.8-0.85-0.9-0.95-1.0
Long-time delay(L)	Trip current (A)	I_L = ···x I_C	1.5	1.5
(Error tolerance : ±10%)	Trip time (sec)	LTD	15-30-60-120-240-480	15-30-60-120-240-480
Short-time delay(S)	Trip current (A)	I_S = ···x I_n	2-3-4-6-8-10-OFF	2-3-4-6-8-10-OFF
(Error tolerance : ±10%)	Trip time (sec)	STD	0.0-0.1-0.2-0.3-0.4-0.5	0.0-0.1-0.2-0.3-0.4-0.5
Instantaneous time delay(I)	Trip current (A)	I_i = ···x I_n	4-6-8-10-12-16-OFF	4-6-8-10-12-16-OFF
(Error tolerance : ±10%)	Trip time (sec)	INST	0.01 under	0.01 under
Ground fault(G)	Trip current (A)	I_g = ···x $I_{n\,Max}$	0.1-0.2-0.3-0.4-0.5-0.6	0.1-0.2-0.3-0.4-0.5-0.6
(Error tolerance : ±10%)	Trip time (sec)	GTD	0.1-0.3-0.8-1.5-3.0	0.1-0.3-0.8-1.5-3.0
Pre-Alarm(P)	Trip current (A)	I_p = ···x I_C	-	0.7-0.8-0.9-0.95-1.0
(Error tolerance : ±10%)	Trip time (sec)	PAL = ···x LTD	-	0.5× Setting value

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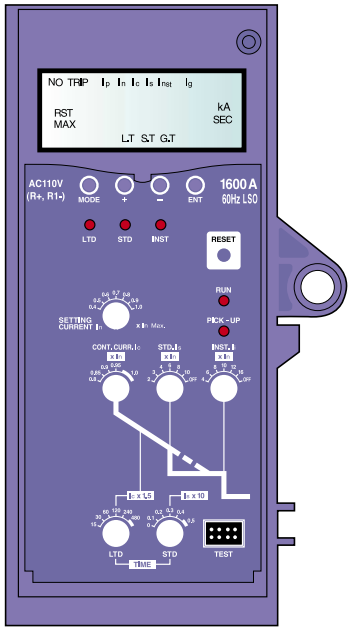
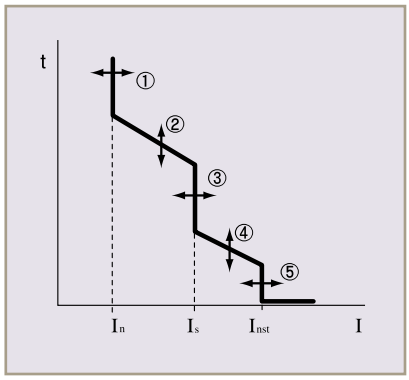
Operating characteristics of trip relay

LSO, LSH (Without ground fault trip & pre-alarm function)



Characteristics of protection

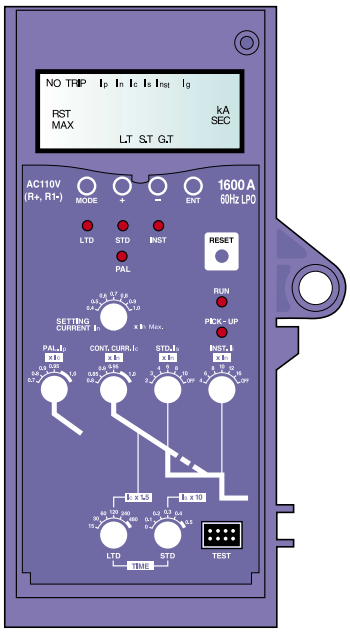


① Long-time delay pick-up current
② Long-time delay tripping time
③ Short-time delay pick-up current
④ Short-time delay tripping time
⑤ Instantaneous pick-up current

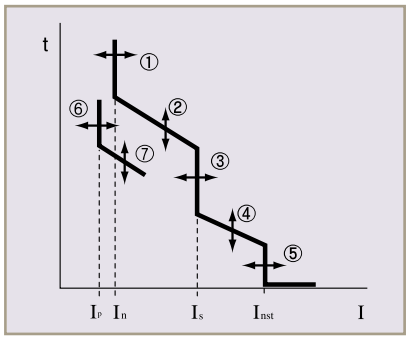
Standard Functions

- Setting the fixed current
- Setting the long-time delay tripping current
- Setting the long-time delay tripping time
- Setting the short-time delay tripping current
- Setting the short-time delay tripping time
- Setting the instantaneous-time delay tripping time
- Trip Indicator

LPO, SPO, LPH, SPH (Without ground fault trip unit)



Characteristics of protection

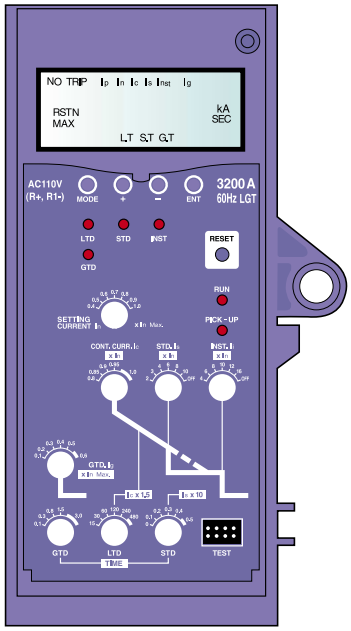


① Long-time delay pick-up current
② Long-time delay tripping time
③ Short-time delay pick-up current
④ Short-time delay tripping time
⑤ Instantaneous pick-up current
⑥ Pre-alarm pick-up current
⑦ Pre-alarm tripping time

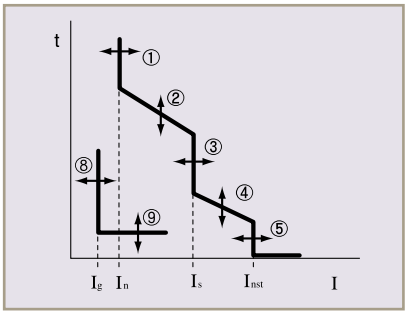
Standard Functions

- Setting the fixed current
- Setting the long-time delay tripping current
- Setting the long-time delay tripping time
- Setting the short-time delay tripping current
- Setting the short-time delay tripping time
- Setting the instantaneous-time delay tripping time
- Setting pre-alarm current
- Trip Indicator

LGT, SGT, LGH, SGH (Without pre-alarn function)



Characteristics of protection

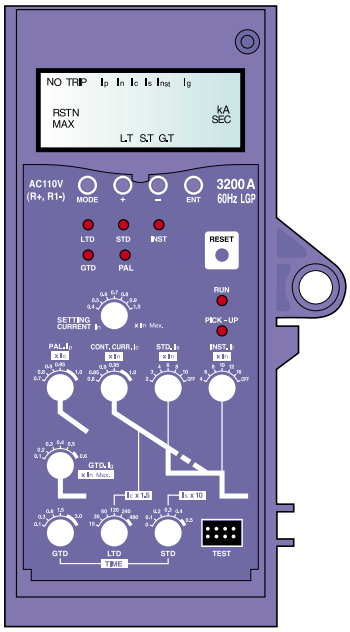


① Long-time delay pick-up current
② Long-time delay tripping time
③ Short-time delay pick-up current
④ Short-time delay tripping time
⑤ Instantaneous pick-up current
⑧ Ground fault pick-up current
⑨ Ground fault trip time

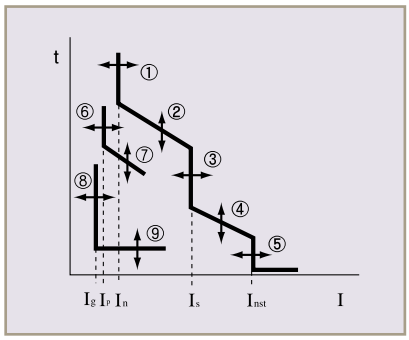
Standard Functions

- Setting the fixed current
- Setting the long-time delay tripping current
- Setting the long-time delay tripping time
- Setting the short-time delay tripping current
- Setting the short-time delay tripping time
- Setting the instantaneous-time delay tripping time
- Setting the ground fault tripping current
- Setting the ground fault tripping time
- Trip Indicator

LGP, SGP, LTH, STH



Characteristics of protection



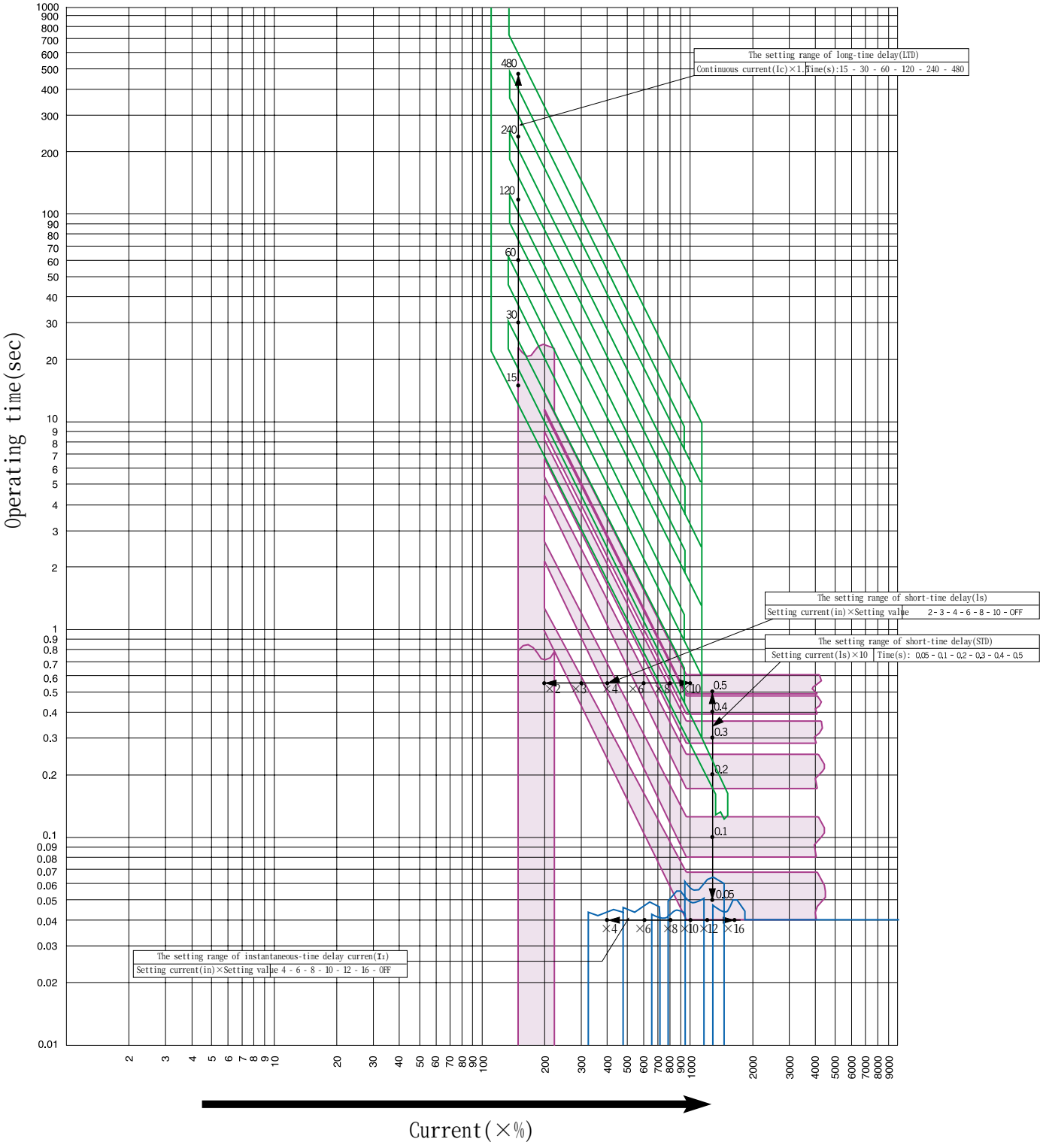
① Long-time delay pick-up current
② Long-time delay tripping time
③ Short-time delay pick-up current
④ Short-time delay tripping time
⑤ Instantaneous pick-up current
⑥ Pre-alarm pick-up current
⑦ Pre-alarm tripping time
⑧ Ground fault pick-up current
⑨ Ground fault trip time

Standard Functions

- Setting the fixed current
- Setting the long-time delay tripping current
- Setting the long-time delay tripping time
- Setting the short-time delay tripping current
- Setting the short-time delay tripping time
- Setting the instantaneous-time delay tripping time
- Setting the ground fault tripping current
- Setting the ground fault tripping time
- Setting pre-alarm current
- Trip Indicator

Characteristics curve

LSO, LSH


Operating time(sec)
Current(×%)
The setting range of long-time delay(LTD)
Continuous current(Ic)×1.5 Time(s):15 - 30 - 60 - 120 - 240 - 480
The setting range of short-time delay(Is)
Setting current(in)×Setting value 2 - 3 - 4 - 6 - 8 - 10 - OFF
The setting range of short-time delay(STD)
Setting current(Is)×10 Time(s): 0.05 - 0.1 - 0.2 - 0.3 - 0.4 - 0.5
The setting range of instantaneous-time delay curren(Ir)
Setting current(in)×Setting value 4 - 6 - 8 - 10 - 12 - 16 - OFF

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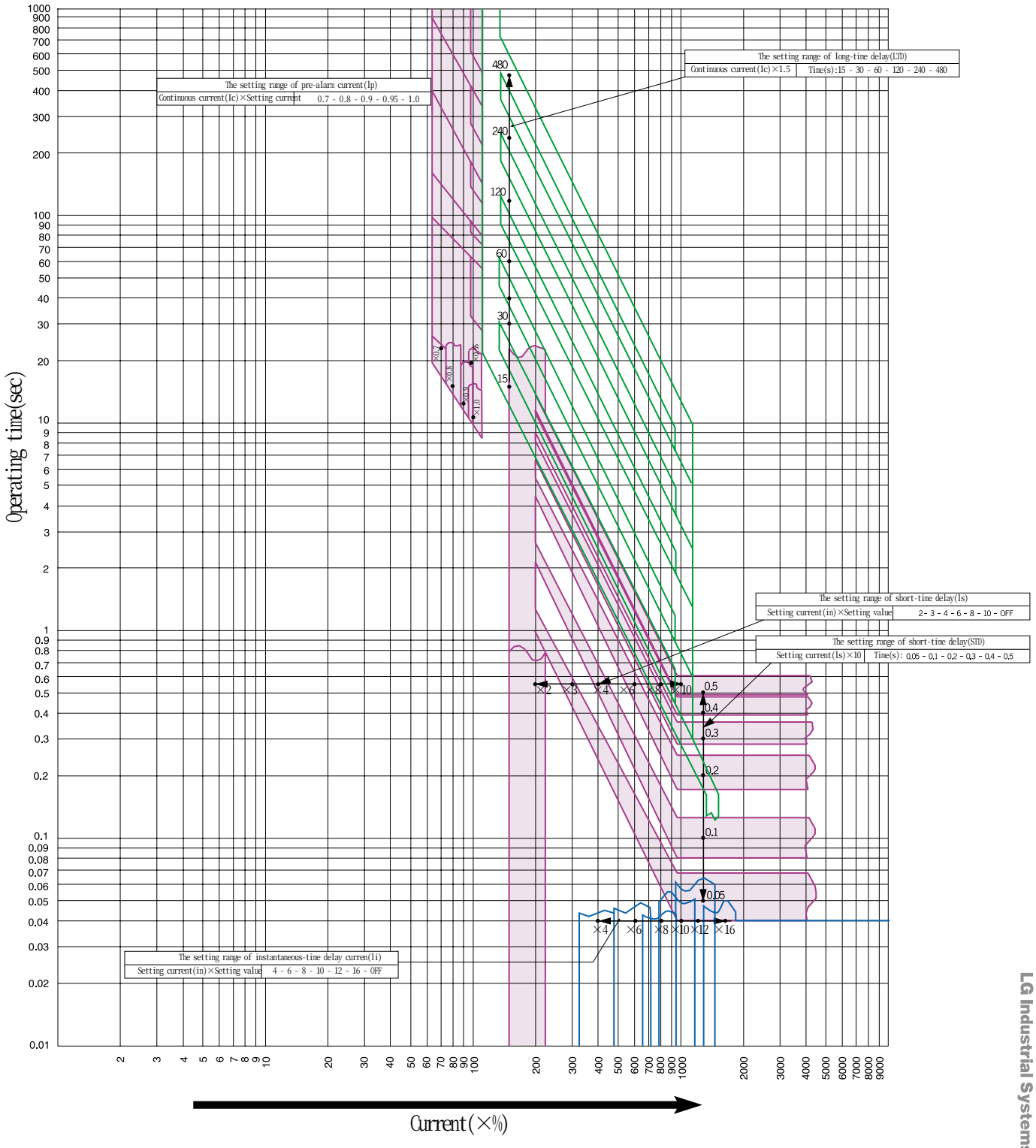
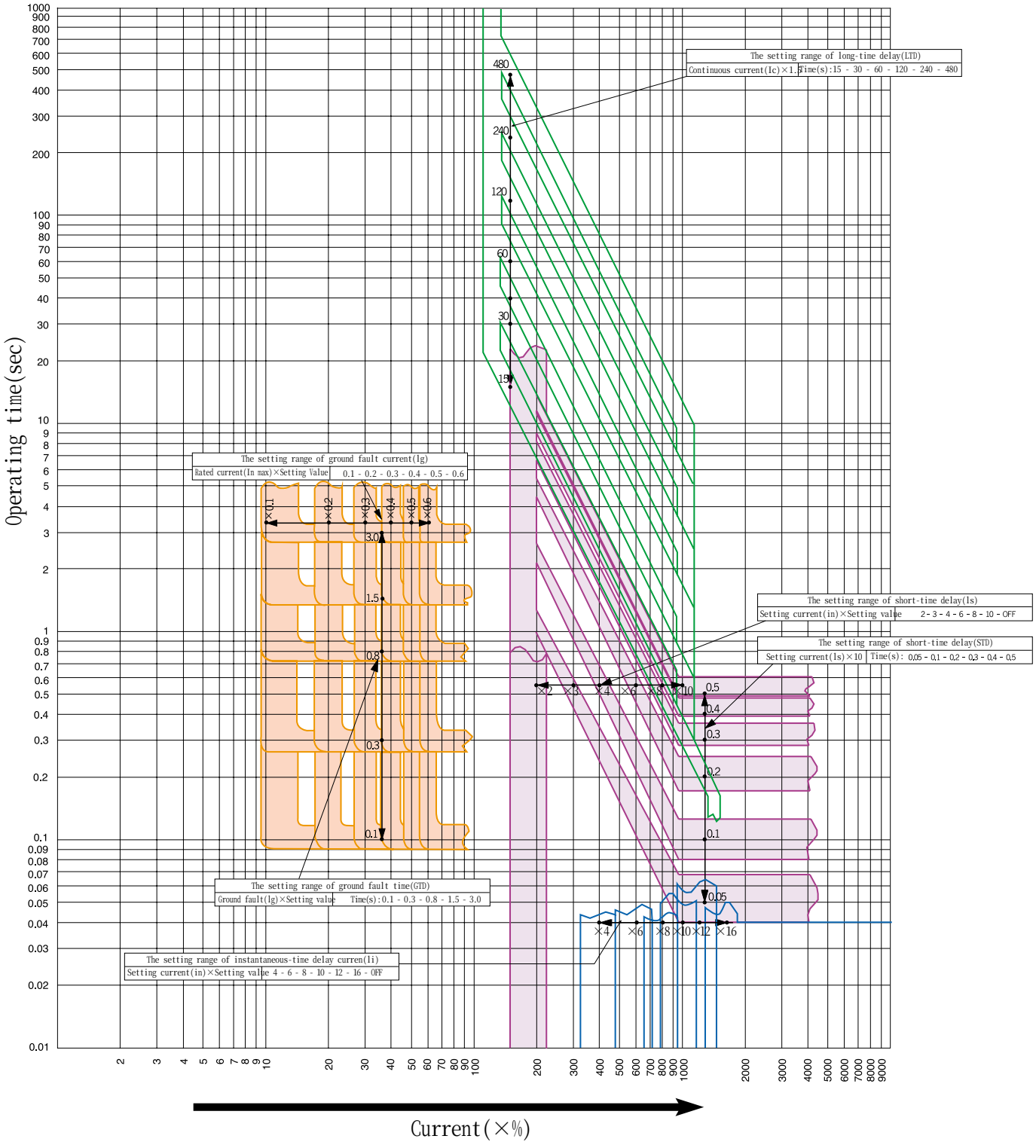
LPO, SPO, LPH, SPH


The setting range of pre-alarm current(Ip)
Continuous current(Ic)×Setting current 0.7 - 0.8 - 0.9 - 0.95 - 1.0
The setting range of long-time delay(LTD)
Continuous current(Ic)×1.5 Time(s):15 - 30 - 60 - 120 - 240 - 480
The setting range of short-time delay(Is)
Setting current(In)×Setting value 2 - 3 - 4 - 6 - 8 - 10 - OFF
The setting range of short-time delay(STD)
Setting current(Is)×10 Time(s): 0.05 - 0.1 - 0.2 - 0.3 - 0.4 - 0.5
The setting range of instantaneous-time delay curren(Ii)
Setting current(In)×Setting value 4 - 6 - 8 - 10 - 12 - 16 - OFF
Operating time(sec)
Current(×%)

Characteristics curve

LGT, SGT, LGH, SGH


Operating time(sec)
Current (×%)
The setting range of long-time delay(LTD)
Continuous current(Ic)×1.5 Time(s):15 - 30 - 60 - 120 - 240 - 480
The setting range of ground fault current(Ig)
Rated current(In max)×Setting Value 0.1 - 0.2 - 0.3 - 0.4 - 0.5 - 0.6
The setting range of short-time delay(Is)
Setting current(In)×Setting value 2 - 3 - 4 - 6 - 8 - 10 - OFF
The setting range of short-time delay(STD)
Setting current(Is)×10 Time(s): 0.05 - 0.1 - 0.2 - 0.3 - 0.4 - 0.5
The setting range of ground fault time(GTD)
Ground fault(Ig)×Setting value Time(s):0.1 - 0.3 - 0.8 - 1.5 - 3.0
The setting range of instantaneous-time delay curren(Ii)
Setting current(In)×Setting value 4 - 6 - 8 - 10 - 12 - 16 - OFF

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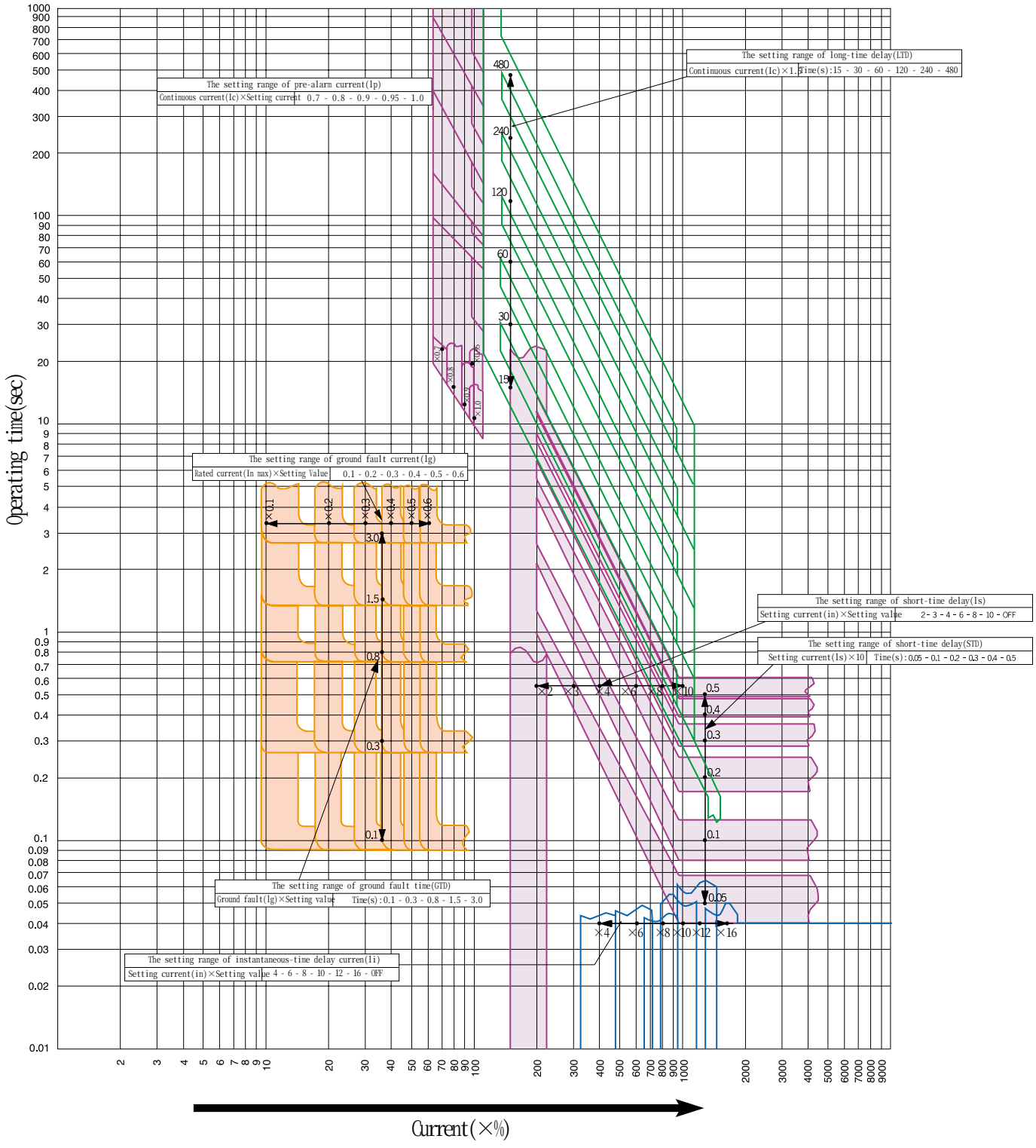
LGP, SGP, LTH, STH


The setting range of long-time delay(LTD)
Continuous current(Ic)×1.5 Time(s):15 - 30 - 60 - 120 - 240 - 480
The setting range of pre-alarm current(Ip)
Continuous current(Ic)×Setting current 0.7 - 0.8 - 0.9 - 0.95 - 1.0
The setting range of ground fault current(Ig)
Rated current(In max)×Setting Value 0.1 - 0.2 - 0.3 - 0.4 - 0.5 - 0.6
The setting range of short-time delay(Is)
Setting current(in)×Setting value 2 - 3 - 4 - 6 - 8 - 10 - OFF
The setting range of short-time delay(STD)
Setting current(Is)×10 Time(s):0.05 - 0.1 - 0.2 - 0.3 - 0.4 - 0.5
The setting range of ground fault time(GTD)
Ground fault(Ig)×Setting value Time(s):0.1 - 0.3 - 0.8 - 1.5 - 3.0
The setting range of instantaneous-time delay curren(Ii)
Setting current(in)×Setting value 4 - 6 - 8 - 10 - 12 - 16 - OFF
Operating time(sec)
Current(×%)

Optional Accessories

OCR TESTER

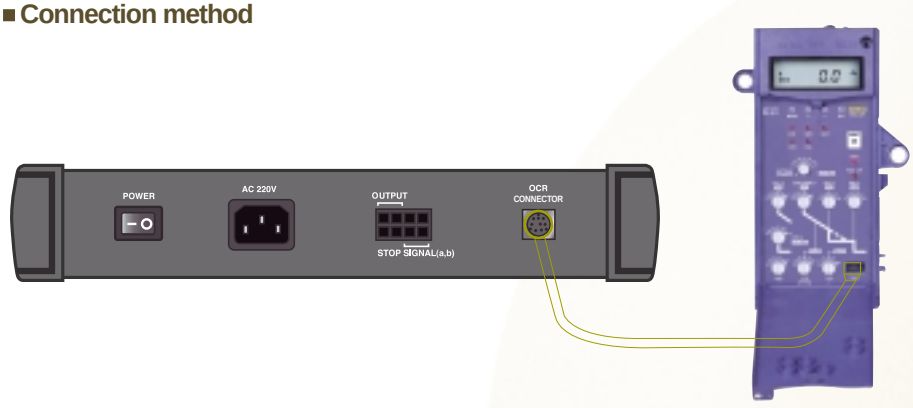
■ Ratings

Name	OT-2000
Rated voltage	AC 100~ 240V
Frequency	50Hz, 60Hz (selection)
Output voltage	In max : (0-1) -> If the value of In max is 1, the output voltage is 200mV In : (0-30) x In max -> It correspond to the signal of the OCR(Ex. If you set In to 30,6V turns out.)"
Type of output voltage	OS, GS, EXT
Stop signa	OCR, a-contact, b-contact
Trip time Check	**TC**:Detect only the operation state of OCR regardless of the time delay characteristics. (Apply DC power) **Testing**: Detect the time delay characteristics of OCR output by a-contact and b-contact] selection

■ Key manufacturing explanation

- **Hz** Key to select frequency(50Hz, 60Hz)
- **S.S** Key to select type of stop signal input voltage of the OCR tester (OCR, a-contact, b-contact)
- **CL** Key to initialize the test current value when ED has been pressed one time.
- **T.C** Key to test whether OCR is operated normaly or not.
- **INIT** Key to initialize test current value (In, In Max) and LED(trip, testing)
- **START** Key to start the test.
- **STOP** Key to stop the operation of tester device(Timer, stop output signal)
- **RESET** Key to initialize timer.(0 ms)
- **ED** Key that should be operated at first to revise test the current value, and select type of the test current.
- Key to shift the digit number of 7-segment,which shows the test current value to right direction
- Key to shift the digit number of 7-segment, which shows test current value to the left direction
- Key to increase 1digit by 1digit of 7-segment that shows the test current value.
- Key to decrease 1digit by 1digit of 7-segment that shows the test current value.
- **SET** Key to set the test current value edited by →,←, ↑ , ↓or CL
- **O.P** Key to select operational characteristics of trip relay
  - OS : Pre-alarm, long-time delay, short-time delay, instantaneous-time delay trip
  - GS : Ground fault trip
  - EXT : Display output of contact except trip relay
  - CA : A Key to calibrate the OCR

■ Connection method



Auxiliary contact

- To remote supervisory of the ON/OFF state of the ACB

■Ratings

Type			Standard type		High capacity type		Remark
			Resistive load	Inductive	Resistive load	Inductive load	
Contact capacity	AC	460V	5A	2A	5A	2.5A	
		250V	10A	10A	10A	10A	
		125V	10A	10A	10A	10A	
	DC	250V	0.3A	0.3A	3A	1.5A	
		125V	0.6A	0.6A	10A	6A	
		30V	10A	6A	10A	10A	
Maximum contact No.		AX0	5a5b		–		Standard charging type
		HX0	–		5a4b		
		AX0	5a5b		–		High speed redose charging type
		HX0	–		5a5b		
Selection			Standard offer Note)		Option		

Note) When you order the high capacity type auxiliary contact, the standard type auxiliary contact is not offered.

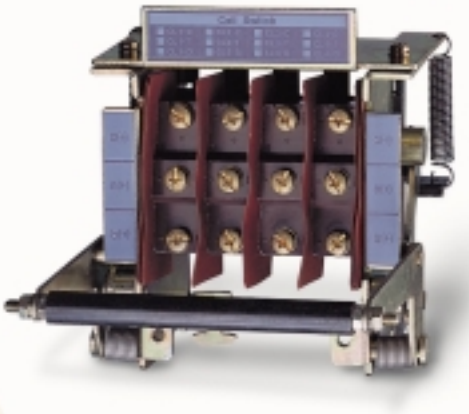
■Contact operating

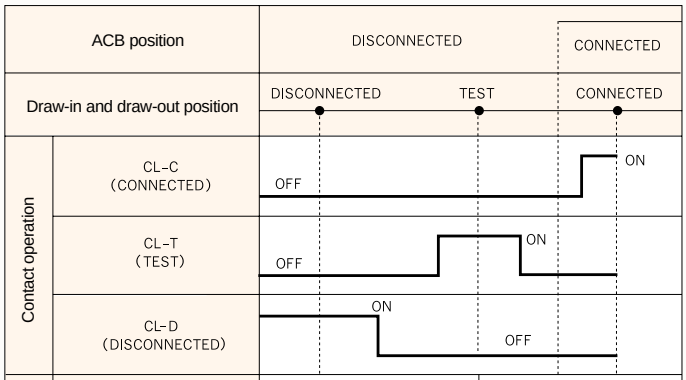
The condition of ACB	a-contact	b-contact
ON	ON	OFF
OFF	OFF	ON

Cell Switch(CL)

To indicate the position (connected, test, dis-connected) of a ACB
It is installed in the upper and back side of a cradle.

Standard contact configuration
-4C:2 Connected 2 Test
-8C:4 Connected 4 Test
※Please change contact configurations if you needed





Contact capacity	Voltage (V)		Resistive load	Inductive load
	AC	460	5	2.5
		250	10	10
		125		
	DC	250	3	1.5
		125	10	6
		30	10	10
Contact number			4C	

Note) The number of maximum contact : 8C (if needed)

Under the development

ON/OFF Button Lock(BL)

To protect mis-operation of the ON/OFF button of ACB (common use 630~3,200A)

Miss Insertion Prevent device (MIP)

When the ratings of ACB and cradle does not match, this device mechanically prevent the ACB from being inserted into the cradle

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Optional accessories

Undervoltage trip device(UVT)

To trip the ACB automatically when the voltage of main power or control power source reduces below its normal value.
It consists of UVT coil and UVT Controller.
UVT is attached to the inside of main body and UVT controller left side of the main(Fixed Type) or cradle(draw-out). In addition, external output contact(1a1b),which can use UVT operation as external control signal, is supplied.

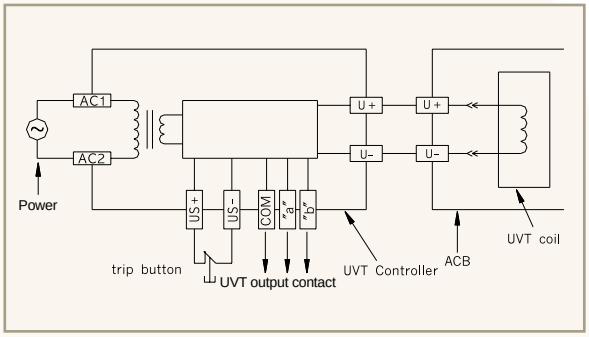
＊For control power use, please apply AC power only.

■ UVT ratings

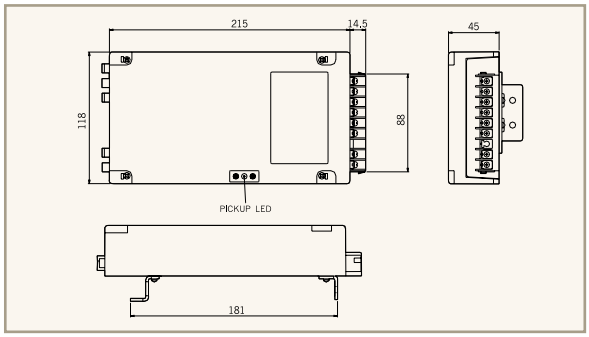
Type	Name	Operating time	Rated voltage	Pick-up voltage	drop-off voltage
Instantaneous type	V1	0.15sec under	AC 110V	Over 85% of the rated voltage	Under 75% of the rated voltage
	V2		AC 220V		
	V3		AC 380V		
	V4		AC 460V		
Time delay type	T1	0.5sec over	AC 110V		
	T2		AC 220V		
	T3		AC 380V		
	T4		AC 460V		

■ Ratings of UVT output contact

Type		Resistance load	Lnductire load
Voltage	AC 125V	5A	2.5A
	DC 30V	5A	2.5A
Contact number		1a1b	



〈UVT circuit〉



〈UVT controller outline dimension〉

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Under the development

Key Lock(KL)

To compulsorily prevent specific breaker from charging(ON) when two or more breakers are used together by interlocking

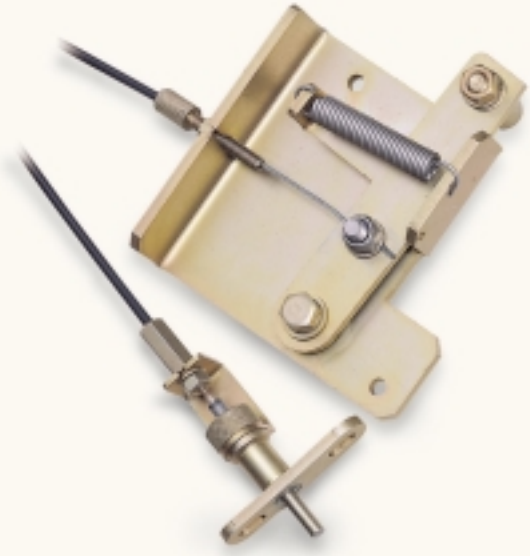
Under the development

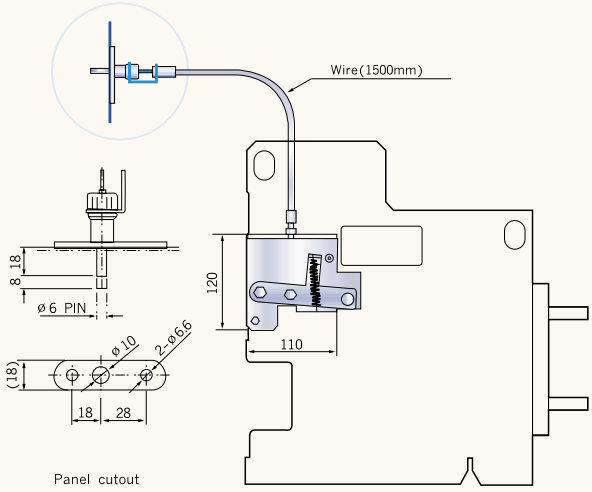
Safety Shutter Lock(STL)

To fix safety shutter for the safety during the operation in draw-out state of a breaker.

Door Interlock(DI)

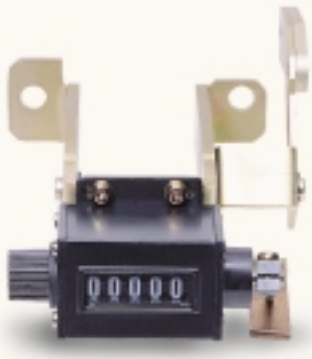
To prevent the panel door from opening when the breaker is ON





Counter (C)

To mechanically indicate the times of ON/OFF operation of breaker



Lifting Hook (LH)

To move the ACB easily

- 630~1600A : Optional offer
- 2000~3200A : Standard offer

Door Frame (DF)

It is the device to look fine after the cut of a switchboard door when the breaker is installed. It helps to check the front of a breaker from the outside of a distributing board easily

※ Please refer to Door Frame in 34 page.

Shorting b-contact (SBC)

It is the contact to maintain the external control circuit normal condition by disconnection of Axb of auxiliary contact when the position of air circuit breaker is moved from connected position to test position. The number of shorting b contact is the same with the number(5b) of the auxiliary contact Axb of air circuit breaker.

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Optional accessories

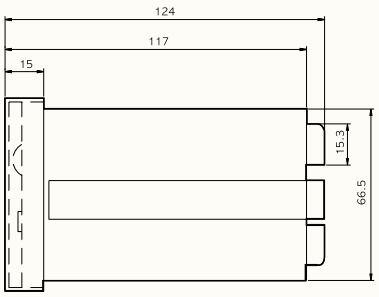
Condenser trip device (CTD)

To trip the breaker electrically within regular time when the control power source is off. It is used with Shunt Coil(SHT).

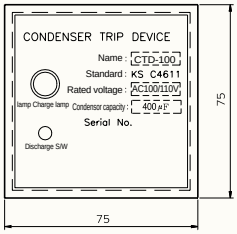
■ Rating

Rating	Specification	
Type name	CTD-100	CTD-200
Rated input voltage(V)	AC 100/110	AC 200/220
Frequency(Hz)	50/60	50/60
Rated charge voltage(V)	140/145	280/310
Charging time	Within 5sec	Within 5sec
Tripping time	3min. over	2min. over
Range of input voltage(%)	85~ 110	85~ 110
Condensor capacity	400㎌	160㎌

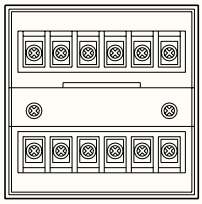
■ Outline dimension



〈Side view〉

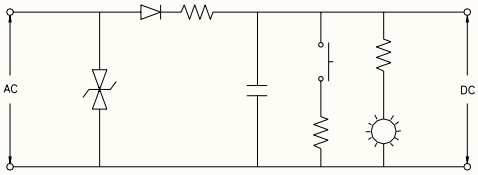


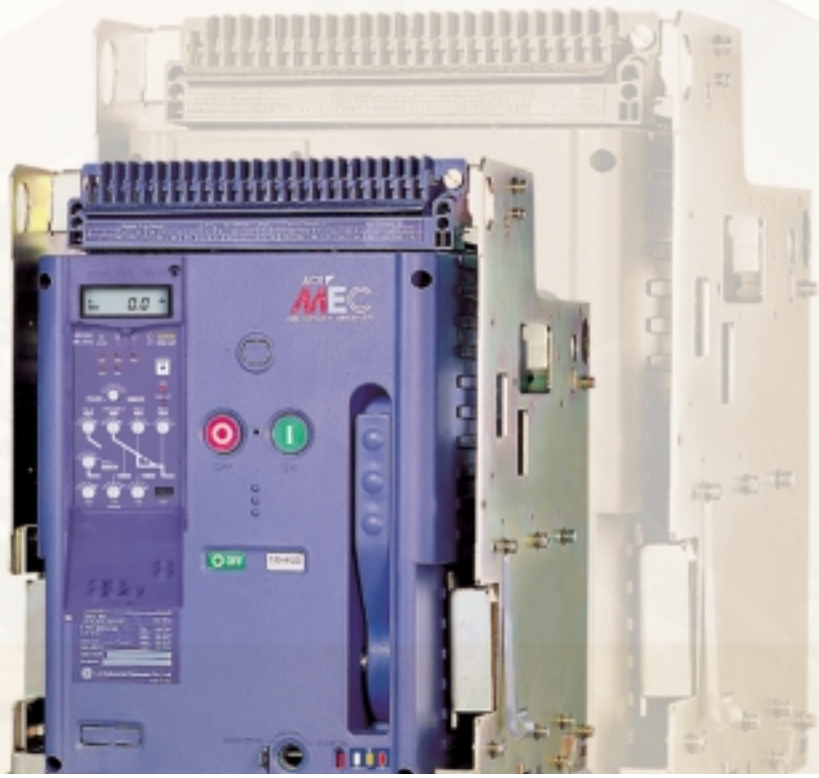
〈Front view〉



〈Rear view〉

■ Circuit





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ATS with ACBs

- **Two types of ATS with ACBs (Bar type, wire type)**
- **For the construction of a ATS with ACBs, the followings are needed**

-Interlock controller assembly(ICU, ACU, EIU)
-Shunt trip coil/closing coil
-Aux. contact/charge complete contact
∗Motoe charging type closing method is needed for ATS with ACBs

Interlock control unit

Typename	Control voltage	Position control	Timedelaycontrol	LED display
ICU	AC 220~240V 50/60Hz	4steps STOP AUTO N R	T1:0.1~30sec T2:0.1~240sec	UN,UR,ON/I

Note 1) T1 : Transfer time from main power to emergency power
(T1 : 0.1,0.5,1,2,4,8,15,30sec)
2) T2 : Transfer time from emergency power to main power
(T2 : 0.1, 4, 8, 15, 30, 60, 120, 240sec)
3) Operating position
STOP : Both main power and emergency power are OFF
AUTO : Automatic transfer between main power and emergency power
N : Ready to transfer from emergency power to main power during the time of recovering the main power
R : Ready to transfer from main power to emergency power when the main power failuer happen

Auxiliary Interlock control unit

Typename	Control voltage	Remark
ACU	AC 220~240V 50/60Hz	Please use the same motor operating voltage with the ACB

Electrical Interlock unit

Typename	Control voltage	Remark
EIU	AC 220~240V 50/60Hz	• Please use the same motor operating voltage with the ACB • It is used as input and output terminal

Interlock method

■**Bar type**

ACB1		ACB2		ACB3
1600AF	↔	1600AF	↔	1600AF
3200AF	↔	3200AF	↔	3200AF
3Pole	↔	3Pole	↔	3Pole
4Pole	↔	4Pole	↔	4Pole

■**Wire type**

Interlock is possible regardless of the Ampere Frame sizes and the number of poles.

<Wire Type>

<Bar Type>

ATS with ACBs

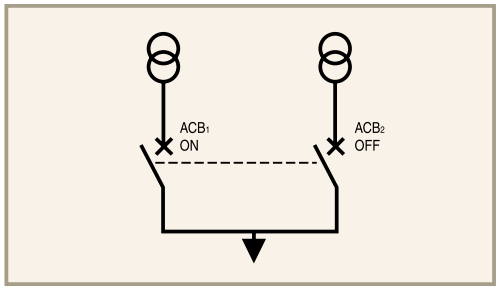
Operational condition

■ In case of using 2 ACBs

● If 1(One) of 2(two) connected ACBs is ON, the other is not ON electrically and mechanically by interlock.

● Operational condition

ACB_1	ACB_2
OFF	OFF
ON	OFF
OFF	ON

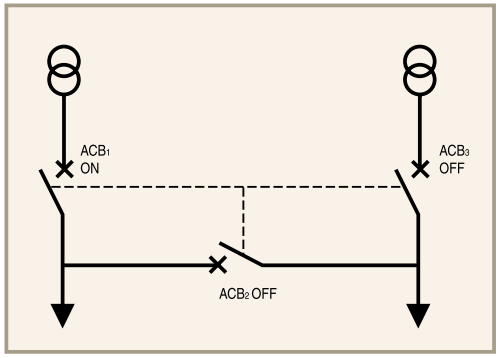


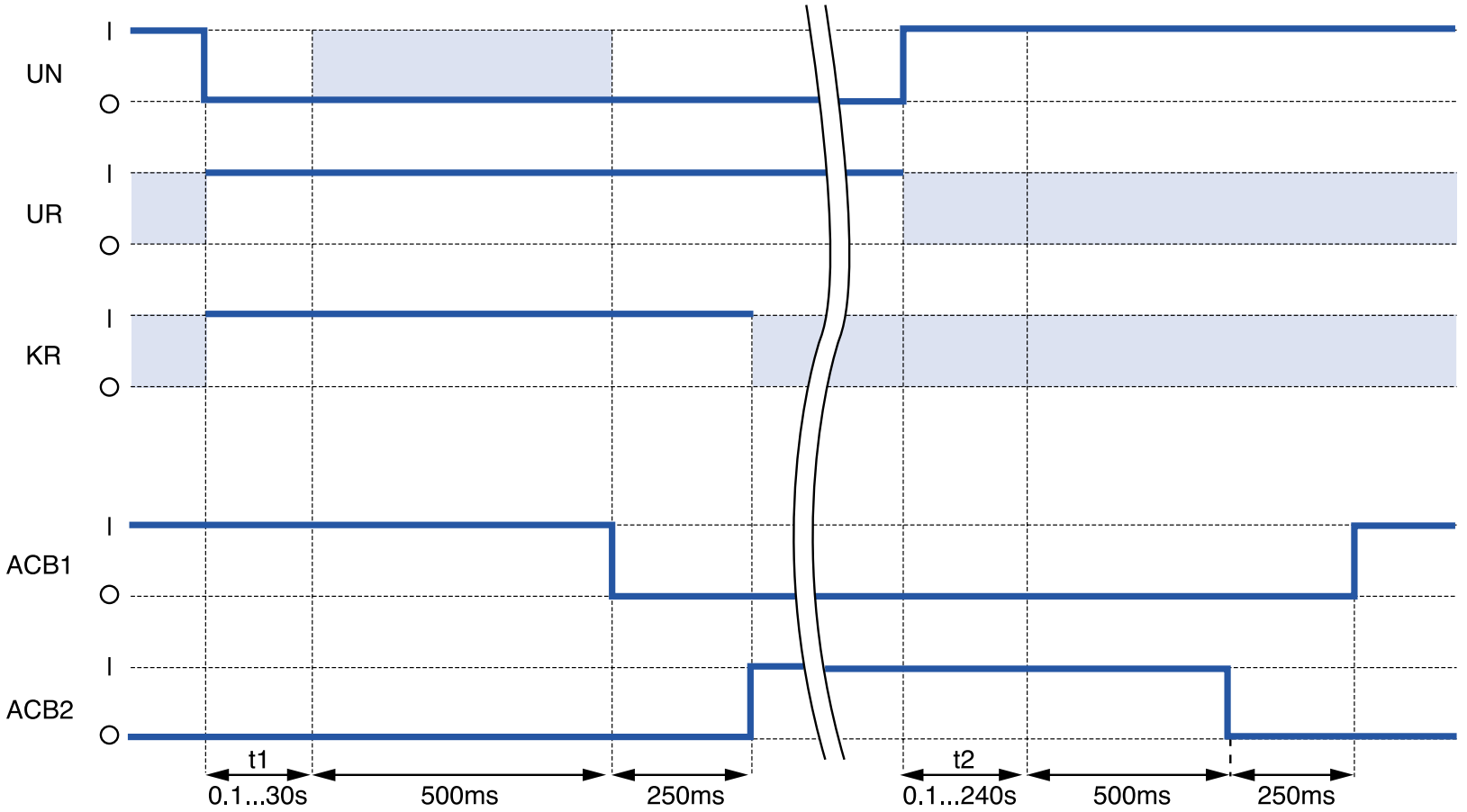
■ In case of using 3 ACBs

● If 2(two) of 3(three) connected ACBs are ON simultaneously, the other is not ON electrically and mechanically by interlock.

● Operational condition

ACB_1	ACB_2	ACB_3
OFF	OFF	OFF
ON	OFF	OFF
ON	ON	OFF
OFF	ON	ON
OFF	OFF	ON
ON	OFF	ON



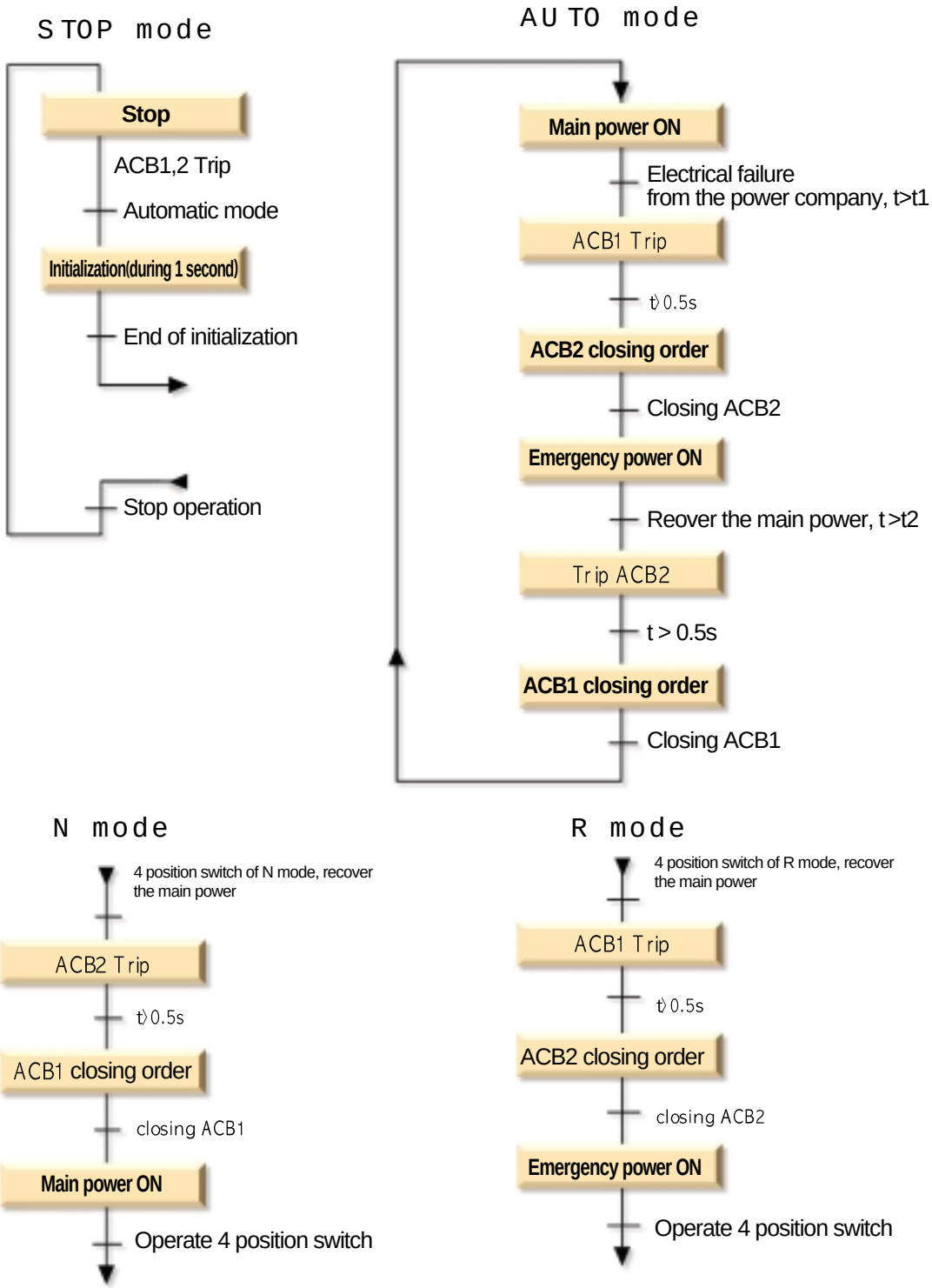


* UN : Main power(normal power)
* UR : Emergency power (standby power)
* KR : Additional check before transfer
* ACB1 : ACB1 with main power(normal power)
* ACB2 : ACB2 with emergency power(standby power)

There is no effect whether the condition is ON of OFF

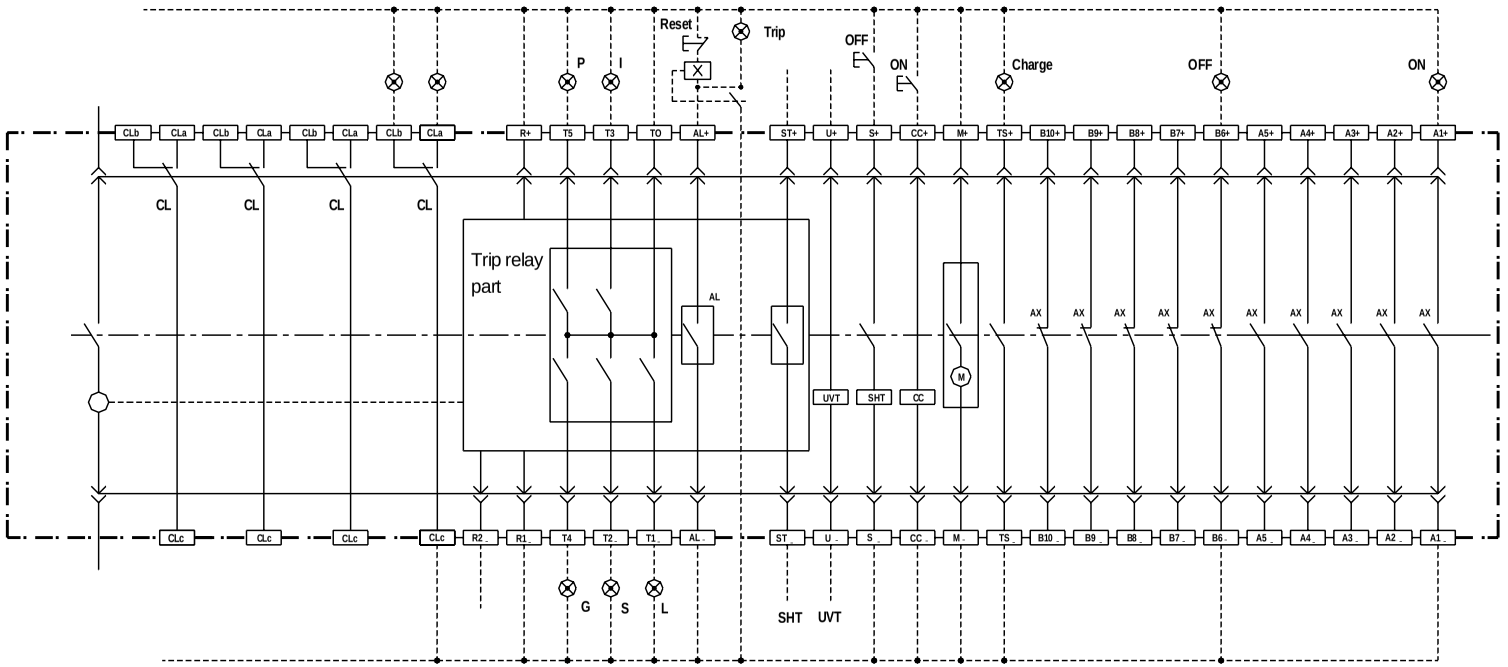
ATS with ACBs

A flow chart of operation



Control circuit

Control circuit



Main circuit | Cell switch | Trip relay | Undervoltage trip device(UVT) | Electric operating circuit | Charge complete contact | Auxiliary switch

※ Terminal code description

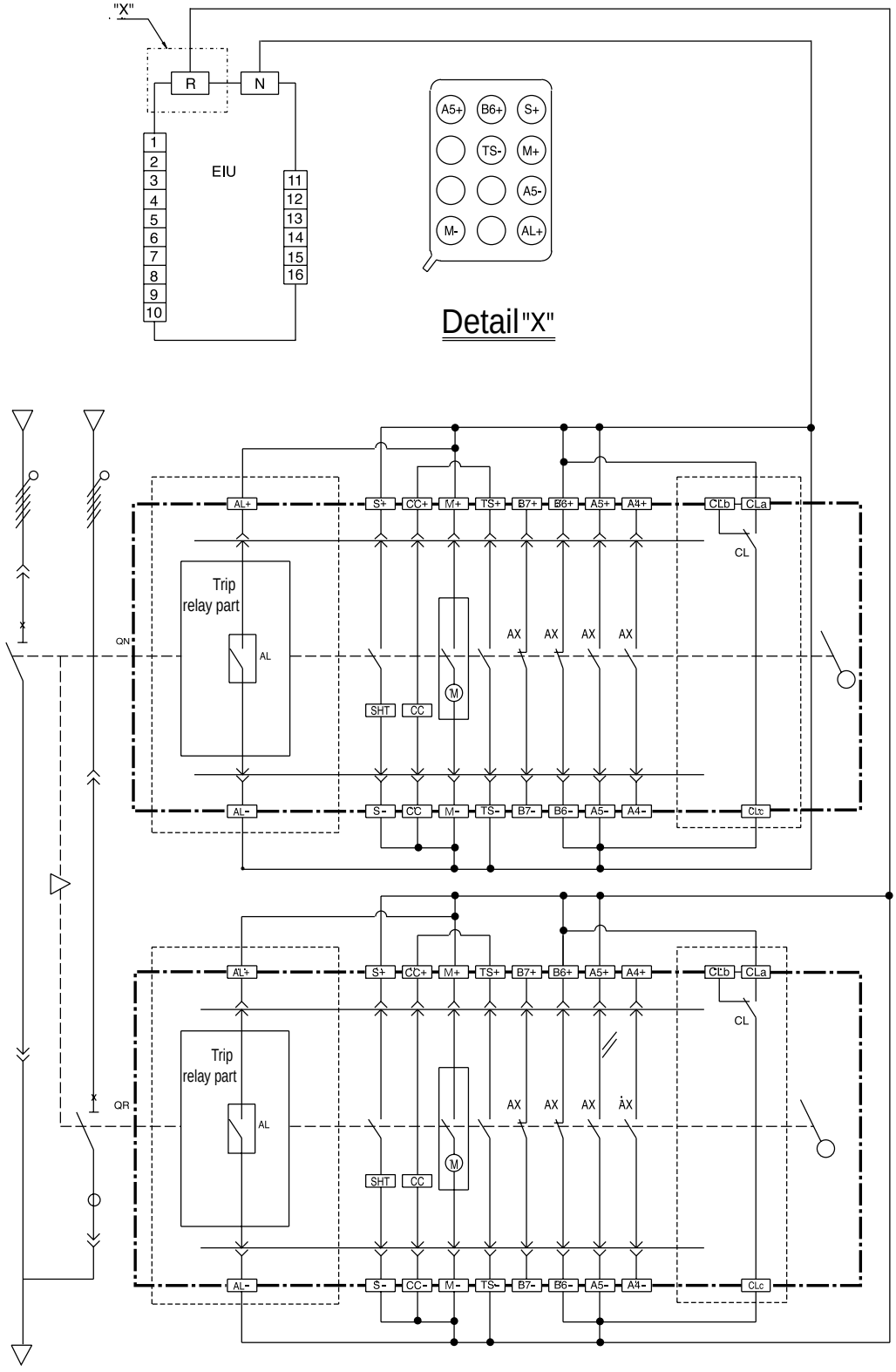
A1 ~ A5	Auxiliary switch a-contact terminal	AL	OCR signal contact terminal	M	MOTOR: Motor for charging	G	Ground-fault delay tripping indication contact
B6 ~ B10	Auxiliary switch b-contact terminal	T0 ~ T4	Trip indication contact terminal	CC	Closing coil	P	Pre-alarm indication contact
TS	Charge complete contact terminal	T5	Pre-alarm indication contact terminal	SHT	Shunt trip coil	X	Magnetic maintenance circuit
M	Motor charging power input terminal	CLa CLb CLc	Cell Switch	UVT	Undervoltage tripping coil	———	Factory wiring
CC	closing coil power input terminal	R+	Trip relay power input terminal(COM)	AL	OCR signal contact	------	User wiring
S	Trip coil power input terminal	R2–	Trip relay power input terminal(AC110V)	L	Long-time delay tripping indication contact		
U	Undervoltage tripping coil terminal	R2–	Trip relay power input terminal(AC220V)	S	Short-time delay tripping indication contact		
ST	External tripping power input terminal			I	Instantaneous-time delay tripping indication contact		

※ Accessory code description

Notes 1) In case of 3 poles type, T4 terminal is excluded."
Notes2) When ZCT is applied for neutral wire, ST+ ST- terminal is used as trip contact of ACB.

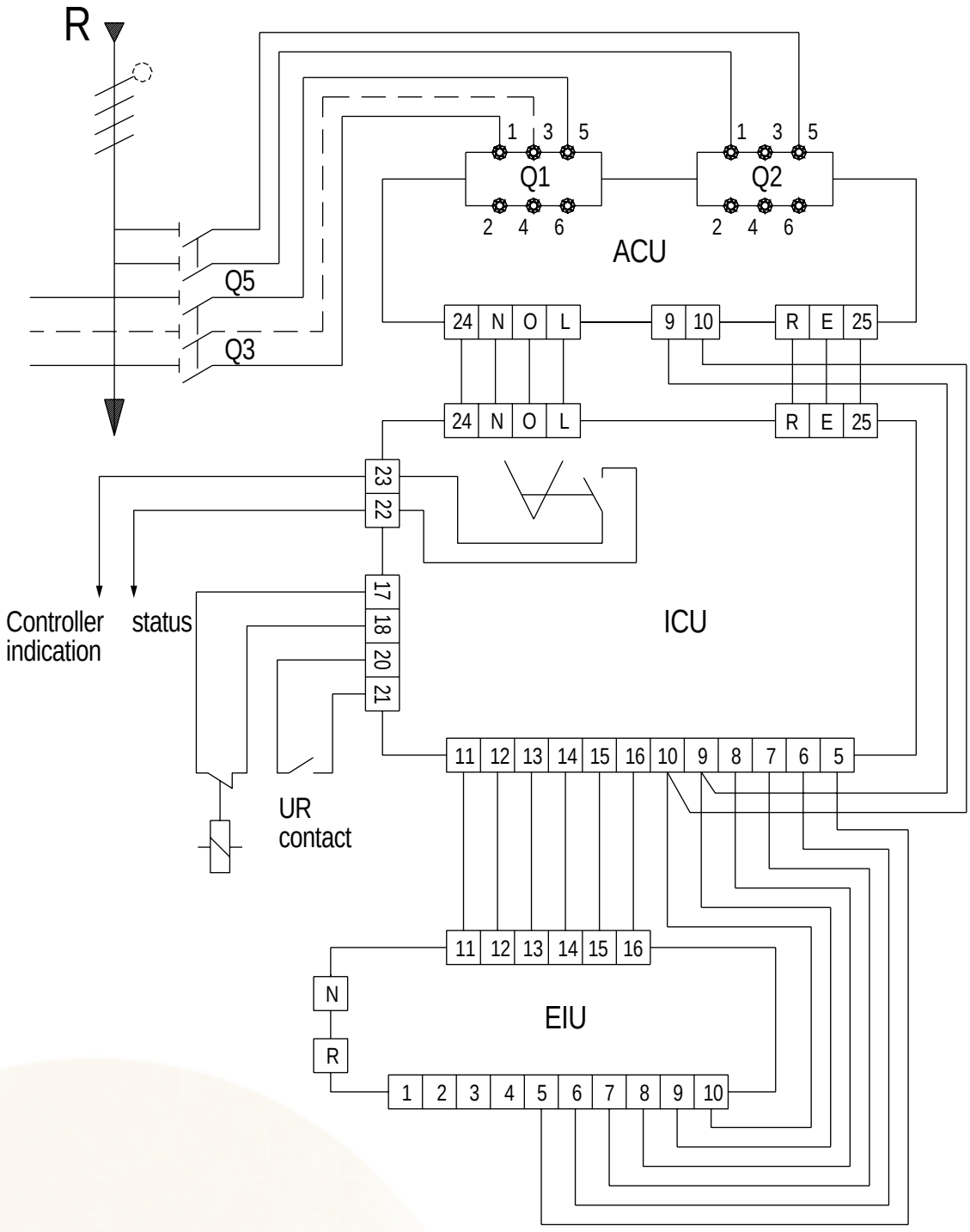
Control circuit

ATS with ACBs control circuit



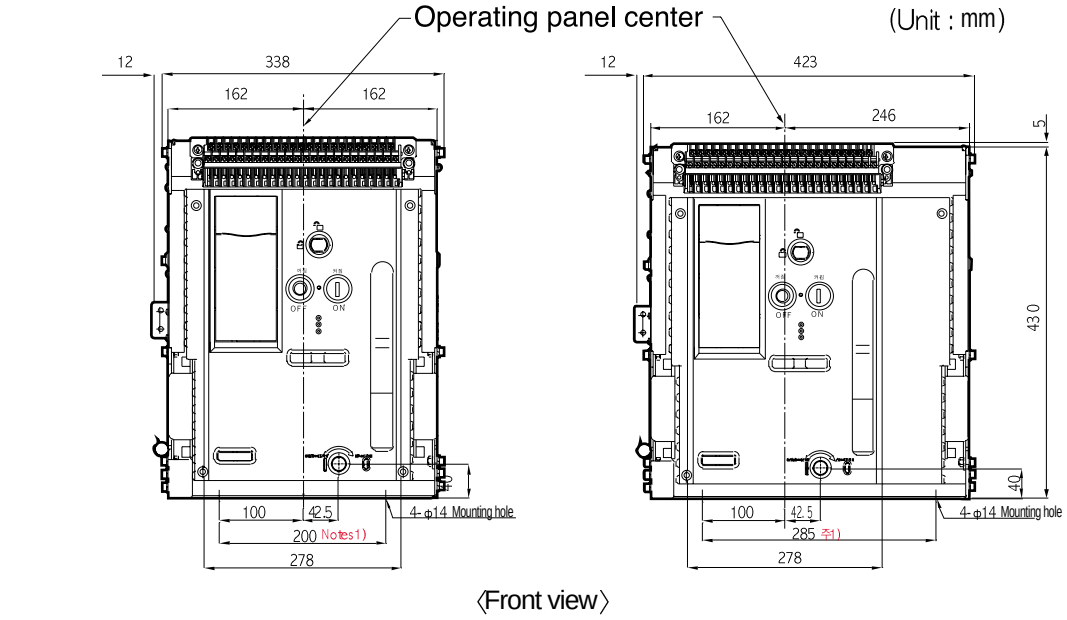
Notes 1)
Part is optional

Controller ass'y wiring

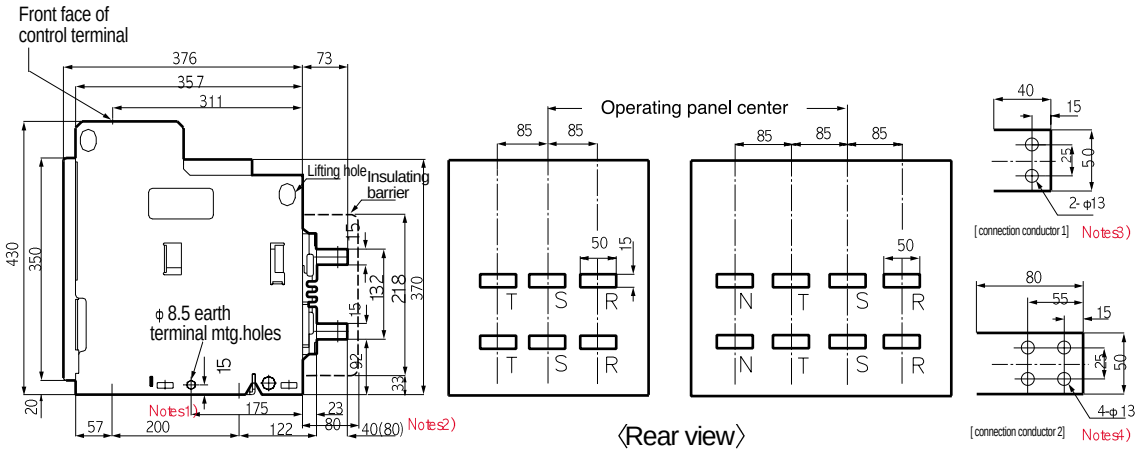


External dimension (Draw-out type)

Horizontal terminal type (630~1600A)



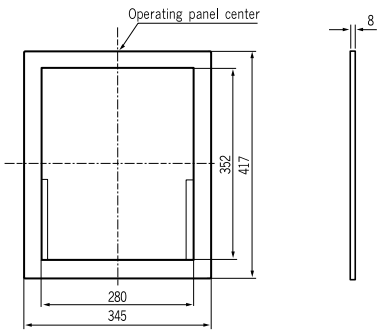
〈Front view〉



〈Side view〉 〈Rear view〉

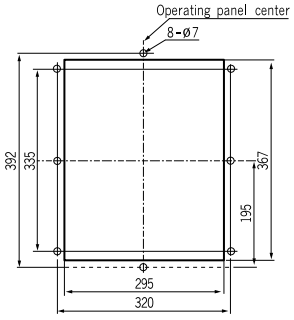
Notes 1) Size of mounting hole
Notes 2) (80)size is the size of connection conductor of cradle which only applies to ATS with ACBs.
Notes 3) Size of connection conductor of Ace-MEC ACB.
Notes 4) It is the standard size of connection conductor of cradle which only applies to ATS with ACBs.
If you need non-standard one, please contact to us

Door Frame (DF)



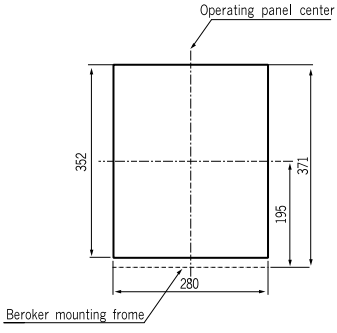
Size of external box

[DF When DF is used]



Dimension of cutting panel

[DF When DF is not used]



Cutting panel

Notes) Please refer to door frame of 4 poles type in 35 page.

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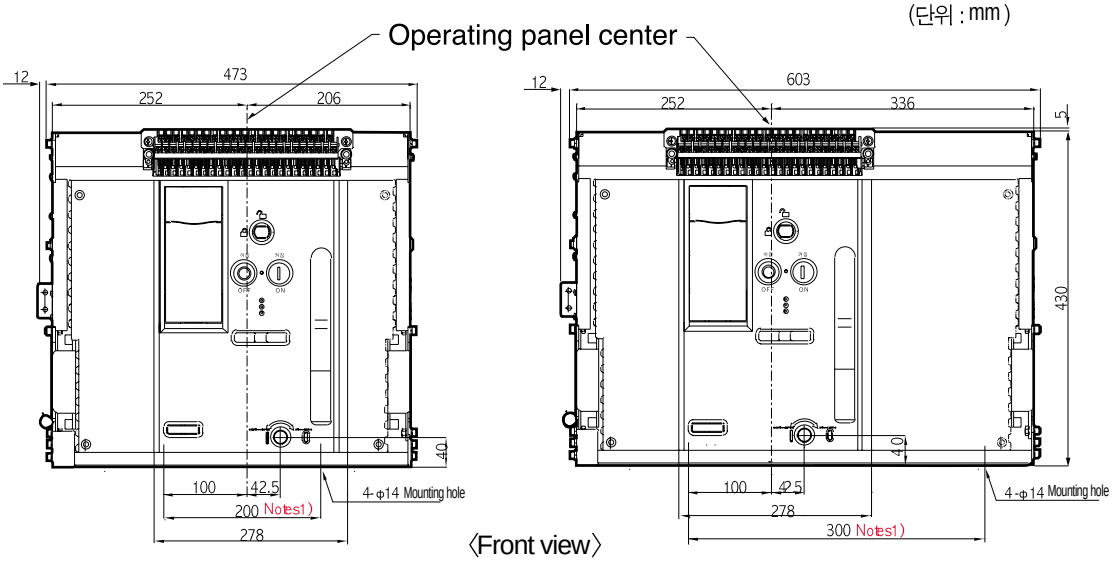
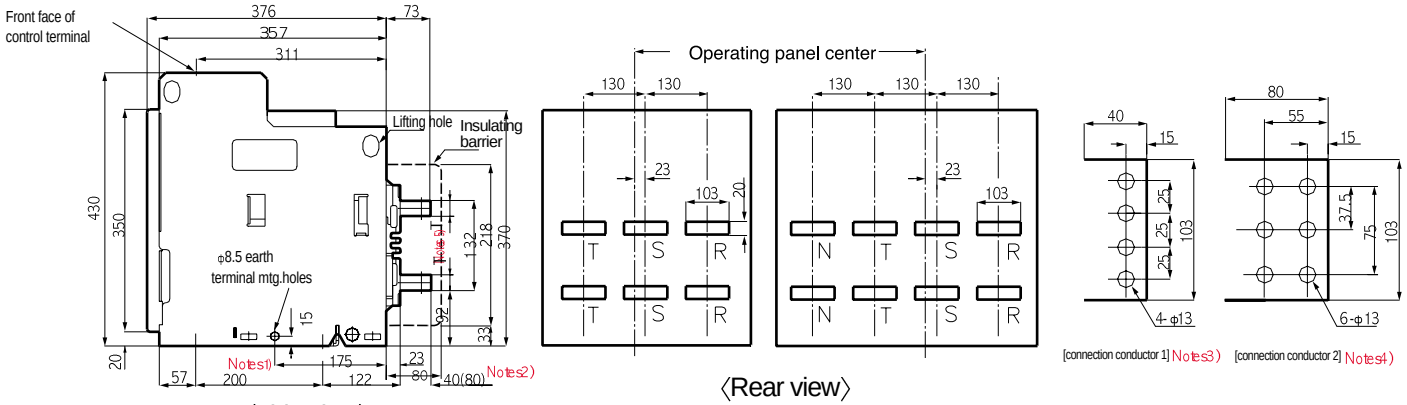
Horizontal terminal type (2000~3200A)

(단위 : mm)



〈Front view〉

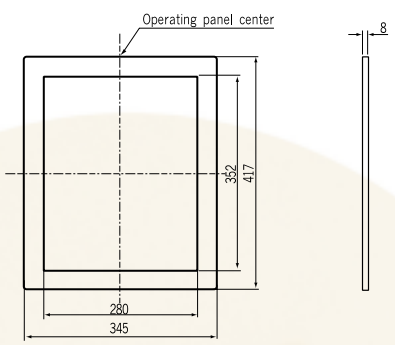


〈Side view〉

〈Rear view〉

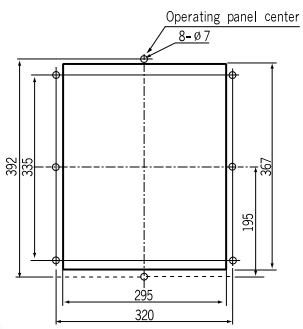
Notes 1) Size of mounting hole
Notes 2) (80)size is the size of connection conductor of cradle which only applies to ATS with ACBs.
Notes 3) Size of connection conductor of Ace-MEC ACB.
Notes 4) It is the standard size of connection conductor of cradle which only applies to ATS with ACBs. If you need non-standard one, please contact to us
Notes 5) Please refer to "T"dimension in 36 page.

Door Frame (DF)



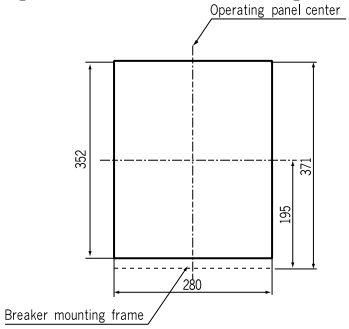
Size of external box

[DF When DF is used]



Dimension of cutting panel

[DF When DF is not used]



Cutting panel

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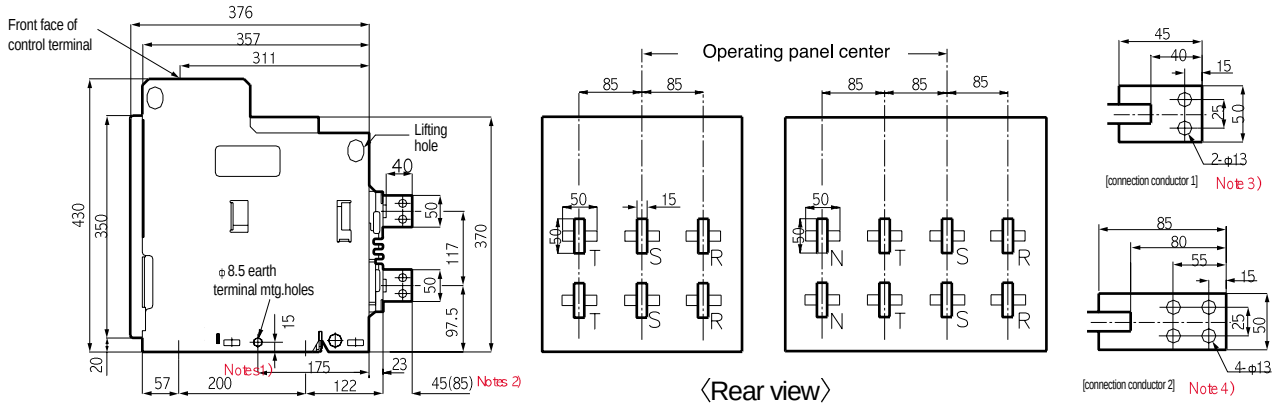
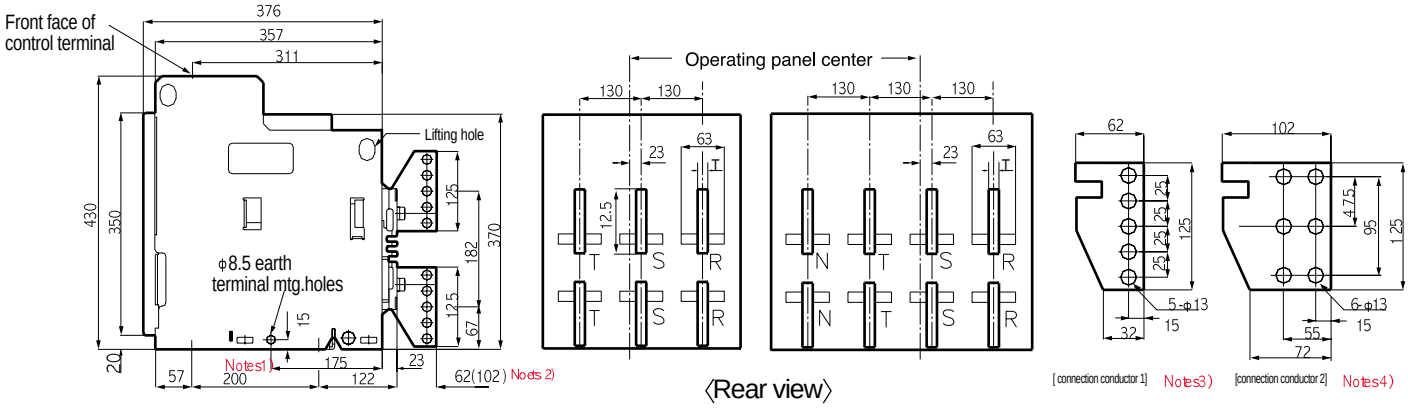
External dimension(Draw-out type)

Vertical terminal type (630~1600A)



Vertical terminal type (2000~3200A)



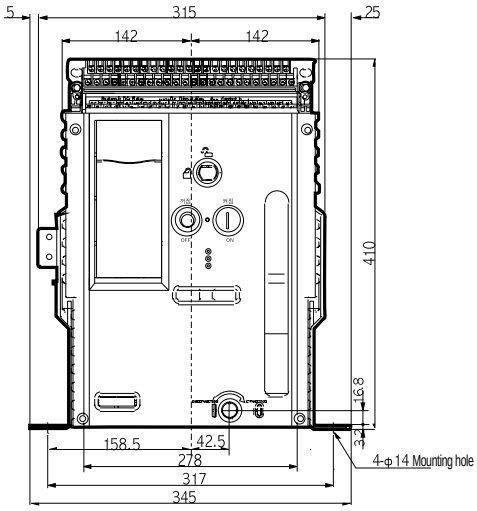
● "T" Size

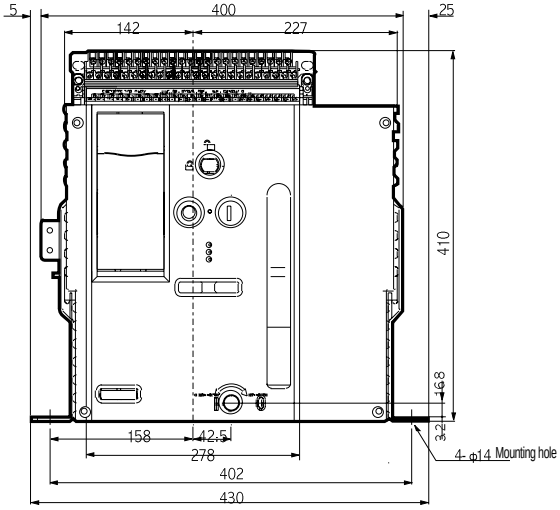
A	T
2000, 2500	20
3200	25

Noets 1) Size of mounting hole
Noets 2) (80)size is the size of connection conductor of cradle which only applies to ATS with ACBs.
Noets 3) Size of connection conductor of Ace-MEC ACB.
Noets4) It is the standard size of connection conductor of cradle which only applies to ATS with ACBs.
If you need non-standard one, please contact to us

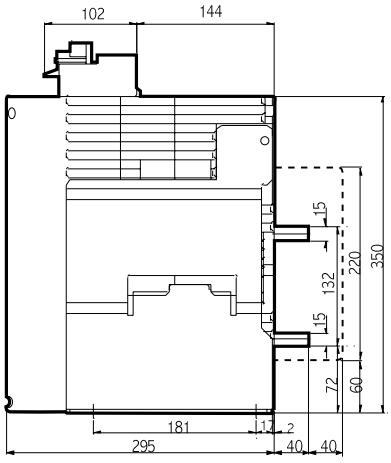
External dimension(Fixed type)

Horizontal terminal type (630~ 1600A)

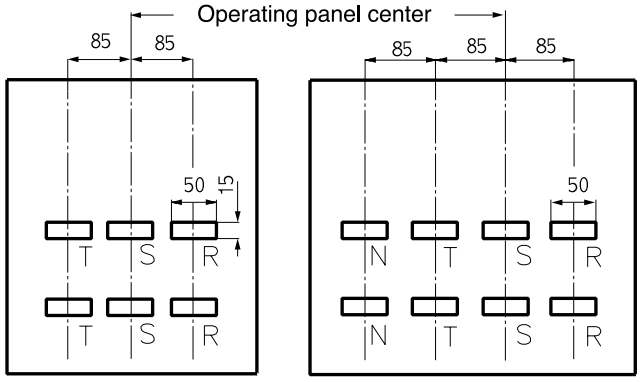




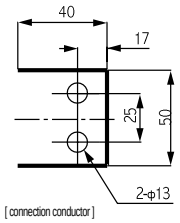
〈Front view〉



〈Side view〉

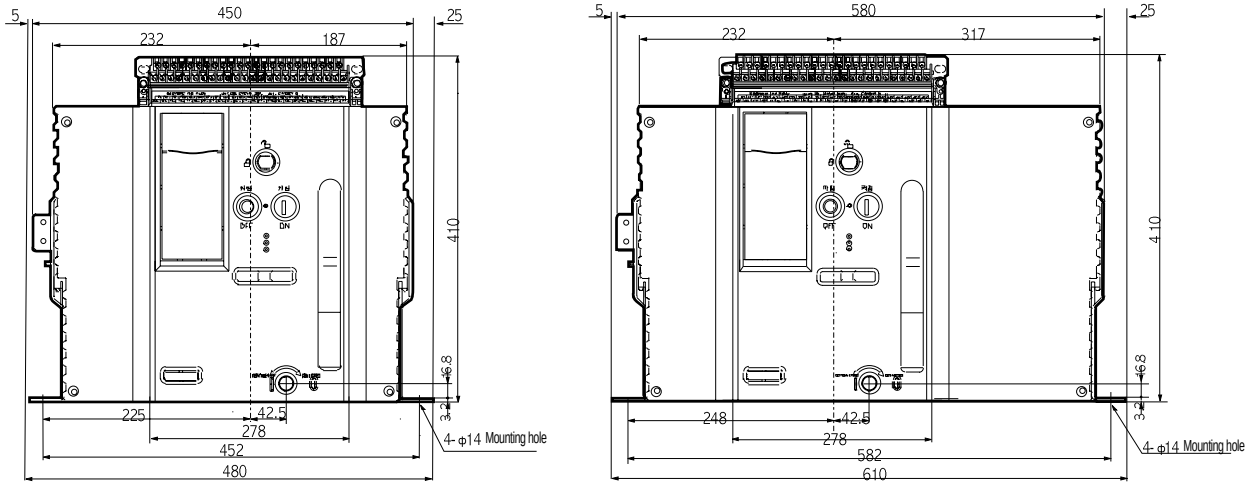


〈Rear view〉

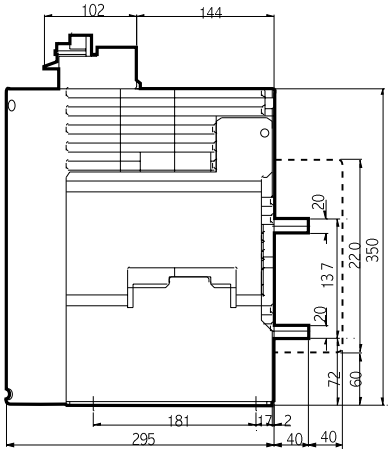


External dimension (Fixed type)

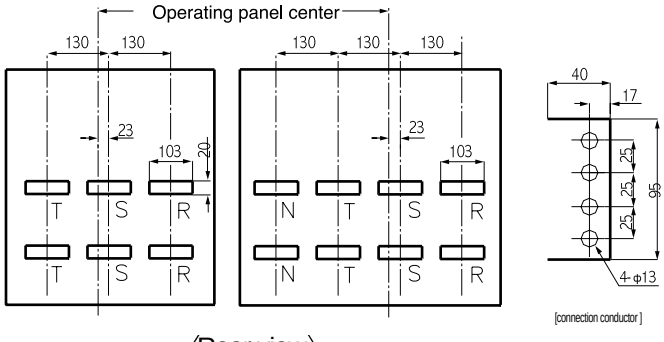
Horizontal terminal type (2000~3200A)



〈Front view〉



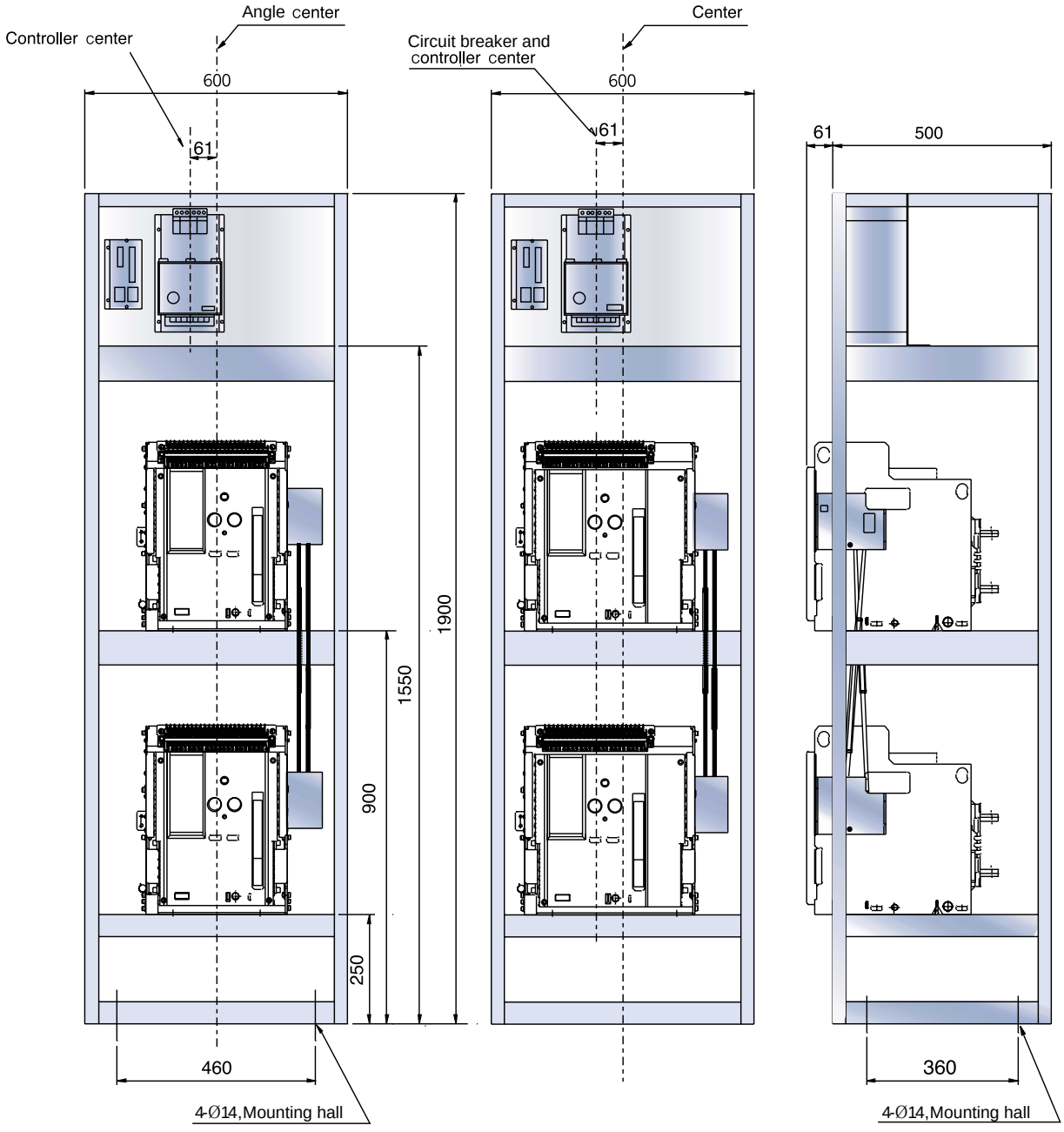
〈Side view〉



〈Rear view〉

External dimension

ATS with ACBs(630~1600A)

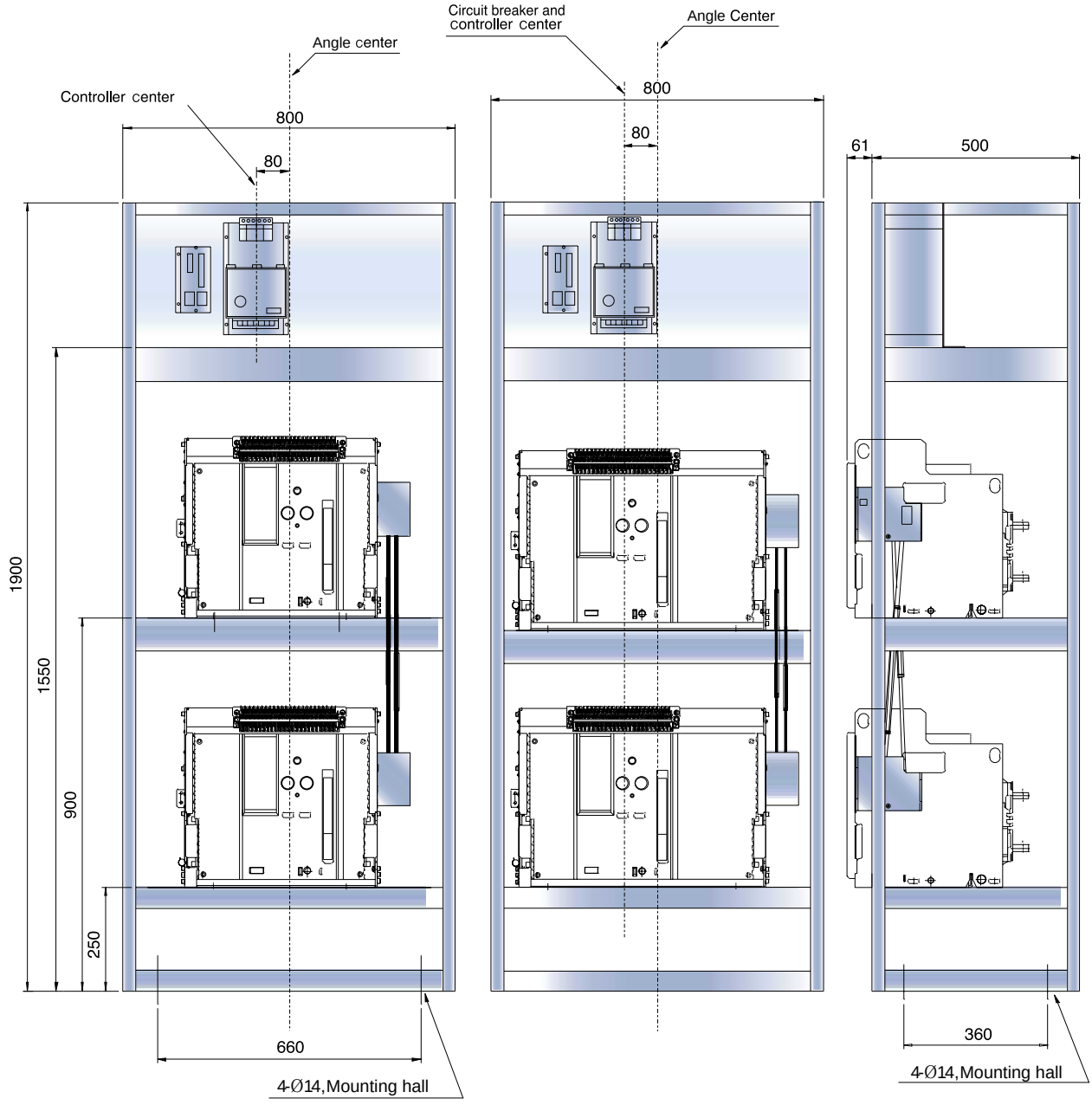


〈3 Poles type〉 〈4 Poles type〉

Notes) Above size is the standard size of our company. If you need other size, Please contact to us.

External dimension

ATS with ACBs(2000~3200A)

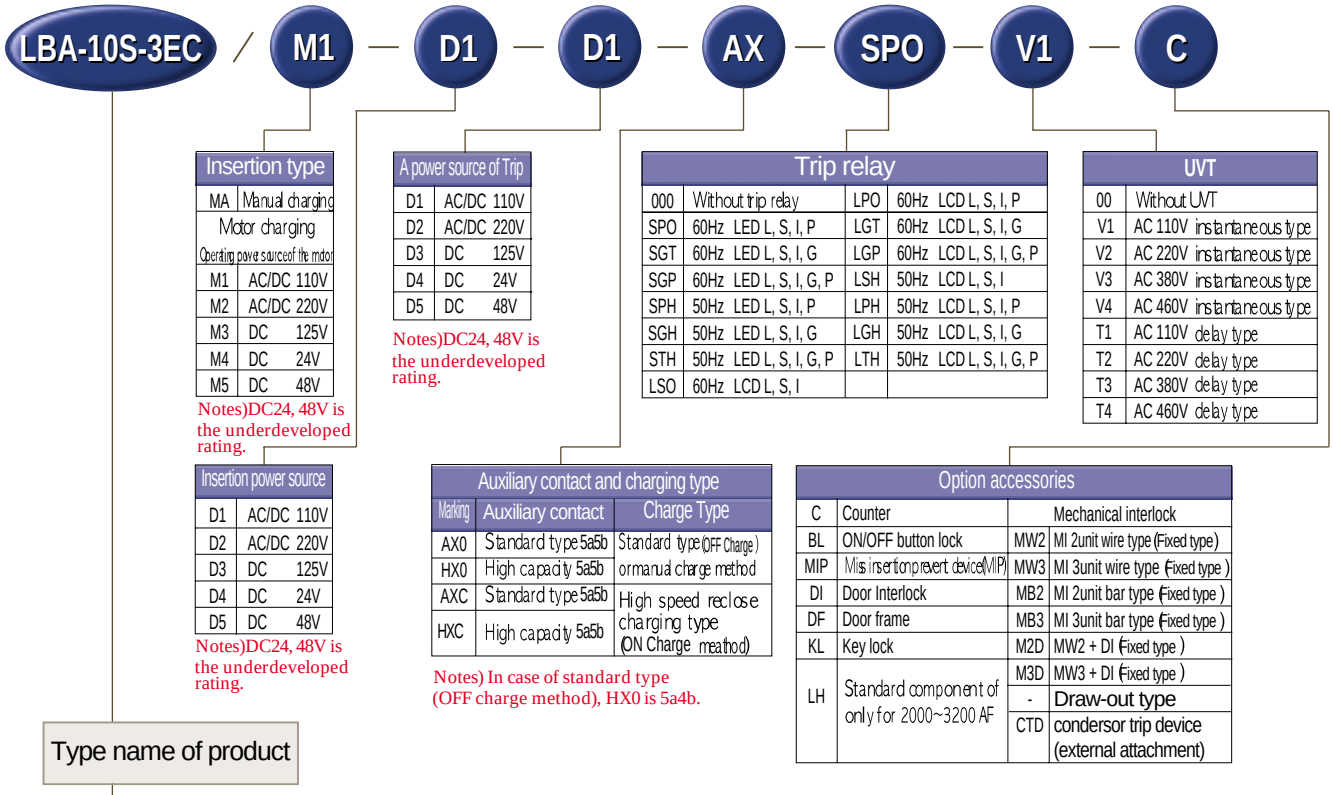


〈3 Poles type〉 〈4 Poles type〉

Notes) Above size is the standard size of our company. If you need other size, please contact to us.

Type selection

Ace-MEC ACB



Insertion type

MA	Manual charging
Motor charging	
Operating power source of the motor	
M1	AC/DC 110V
M2	AC/DC 220V
M3	DC 125V
M4	DC 24V
M5	DC 48V

Notes)DC24, 48V is the underdeveloped rating.

A power source of Trip

D1	AC/DC 110V
D2	AC/DC 220V
D3	DC 125V
D4	DC 24V
D5	DC 48V

Notes)DC24, 48V is the underdeveloped rating.

Trip relay

000	Without trip relay	LPO	60Hz LCD L, S, I, P
SPO	60Hz LED L, S, I, P	LGT	60Hz LCD L, S, I, G
SGT	60Hz LED L, S, I, G	LGP	60Hz LCD L, S, I, G, P
SGP	60Hz LED L, S, I, G, P	LSH	50Hz LCD L, S, I
SPH	50Hz LED L, S, I, P	LPH	50Hz LCD L, S, I, P
SGH	50Hz LED L, S, I, G	LGH	50Hz LCD L, S, I, G
STH	50Hz LED L, S, I, G, P	LTH	50Hz LCD L, S, I, G, P
LSO	60Hz LCD L, S, I		

UVT

00	Without UVT
V1	AC 110V instantaneous type
V2	AC 220V instantaneous type
V3	AC 380V instantaneous type
V4	AC 460V instantaneous type
T1	AC 110V delay type
T2	AC 220V delay type
T3	AC 380V delay type
T4	AC 460V delay type

Insertion power source

D1	AC/DC 110V
D2	AC/DC 220V
D3	DC 125V
D4	DC 24V
D5	DC 48V

Notes)DC24, 48V is the underdeveloped rating.

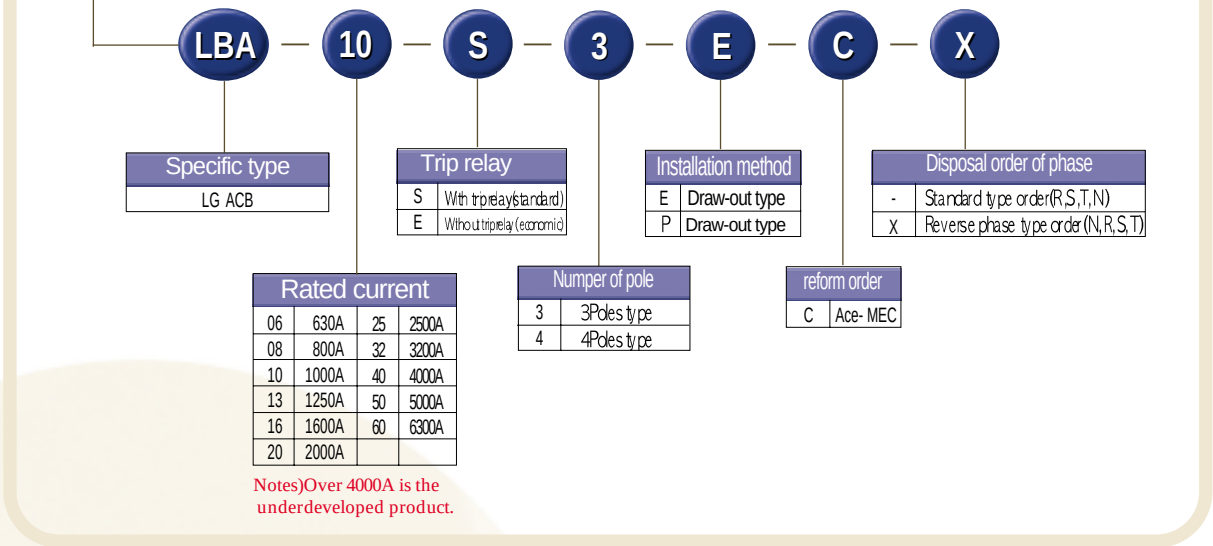
Auxiliary contact and charging type

Marking	Auxiliary contact	Charge Type
AX0	Standard type 5a5b	Standard type (OFF Charge)
HX0	High capacity 5a5b	or manual charge method
AXC	Standard type 5a5b	High speed reclose charging type (ON Charge meathod)
HXC	High capacity 5a5b	

Notes) In case of standard type (OFF charge method), HX0 is 5a4b.

Option accessories

C	Counter	Mechanical interlock	
BL	ON/OFF button lock	MW2	MI 2unit wire type (Fixed type)
MIP	Mis insertion prevert device(MIP)	MW3	MI 3unit wire type (Fixed type)
DI	Door Interlock	MB2	MI 2unit bar type (Fixed type)
DF	Door frame	MB3	MI 3unit bar type (Fixed type)
KL	Key lock	M2D	MW2 + DI (Fixed type)
LH	Standard component of only for 2000~3200 AF	M3D	MW3 + DI (Fixed type)
		-	Draw-out type
		CTD	condersor trip device (external attachment)



Specific type

LG ACB

Trip relay

S	With trip relay(standard)
E	Without trip relay (economic)

Installation method

E	Draw-out type
P	Draw-out type

Disposal order of phase

-	Standard type order(R,S,T,N)
X	Reverse phase type order(N,R,S,T)

Rated current

06	630A	25	2500A
08	800A	32	3200A
10	1000A	40	4000A
13	1250A	50	5000A
16	1600A	60	6300A
20	2000A		

Notes)Over 4000A is the underdeveloped product.

Numper of pole

3	3Poles type
4	4Poles type

reform order

C	Ace- MEC

Notes) Order procedure of Ace-MEC ACB refers to 43 page of Ace-MEC ACB order sheet.

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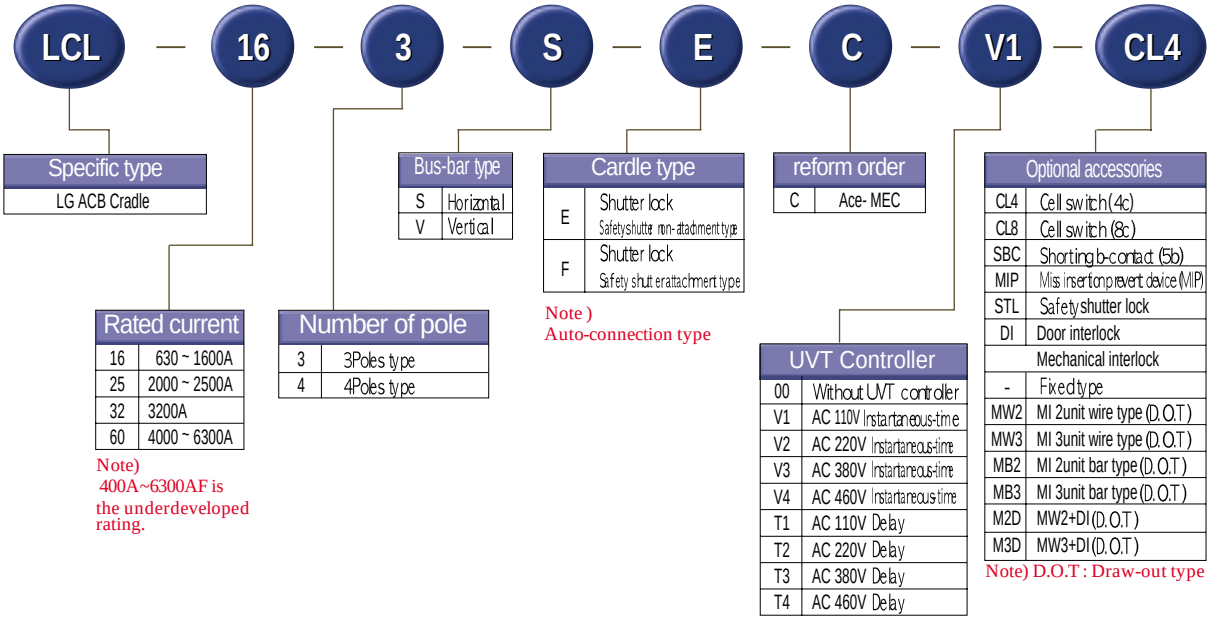
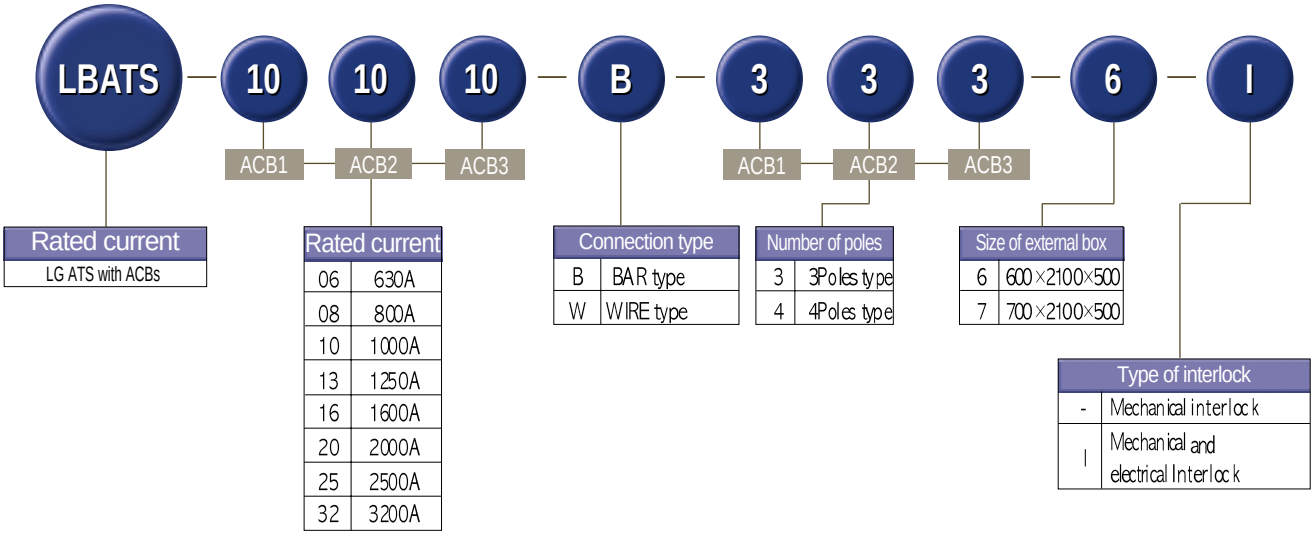
Ace-MEC ACB CRADLE



ATS with ACBs



Notes) Order procedure of ATS with ACBs refers to 44 page of ATS with ACBs order sheet.

Ordering sheet for Ace-MEC ACB

month date year

Reception	LG Industrial Systems co., Ltd			team		Esqr.	
Dispatch	Company name		Name		TEL.		FAX.
Project			Delivery data		Delivery place		

ACB

Ratings Quantity

☐ 630A _____EA ☐ 800A _____EA ☐ 1000A _____EA
☐ 1250A _____EA ☐ 1600A _____EA ☐ 2000A _____EA
☐ 2500A _____EA ☐ 3200A _____EA

Trip relay

☐ No
☐ Yes

Type	Operating characteristics						Frequency	Display method
	Long-time delay	Short-time delay	Instantaneous	Ground fault	Pre-alarm	Marking method		
SPO	■	■	■	–	■	L, S, I, P	60Hz	LED type
SGT	■	■	■	■	–	L, S, I, G		
SGP	■	■	■	■	■	L, S, I, G, P		
SPH	■	■	■	–	■	L, S, I, P	50Hz	
SGH	■	■	■	■	–	L, S, I, G		
STH	■	■	■	■	■	L, S, I, G, P		
LSO	■	■	■	–	–	L, S, I	60Hz	LCD & LED type
LPO	■	■	■	–	■	L, S, I, P		
LGT	■	■	■	■	–	L, S, I, G		
LGP	■	■	■	■	■	L, S, I, G, P		
LSH	■	■	■	–	–	L, S, I	50Hz	
LPH	■	■	■	–	■	L, S, I, P		
LGH	■	■	■	■	–	L, S, I, G		
LTH	■	■	■	■	■	L, S, I, G, P		

Notes) L:Long-time delay, S:short-time delay, I:Instantaneous-time delay, G:Ground falult, P:Pre-Alarm

Number of pole: ☐ 3Poles type ☐ 4Poles type

Installation type: ☐ Draw-out type ☐ Fixed type

Diposal order of phase: ☐ Standard type(R, S, T, N) ☐ Reverse phase type(N, R, S, T)

Insertion type

☐ Manul charging
☐ Motor charging
- Charging type
  - ☐ Standard type(OFF Charging type) ☐ High speed(ON Charging type)
- Operating power source of the motor
  - ☐ AC/DC 110V ☐ DC 125V ☐ DC 48V Notes1)
  - ☐ AC/DC 220V ☐ DC 24V Notes1)

Insertion power

☐ AC/DC 110V ☐ DC 125V ☐ DC 48V Notes1)
☐ AC/DC 220V ☐ DC 24V Notes1)

Trip power

☐ AC/DC 110V ☐ DC 125V ☐ DC 48V Notes1)
☐ AC/DC 220V ☐ DC 24V Notes1)

Cradle

Cradle type: ☐ Safety shutter non-attachment type ☐ Safety shutter attachment type

Bus-bar type: ☐ Standard type(horizontal) ☐ Nonstandard type(vertical)

Option Accessories

Main body

●Auxiliary(5a5b) ☐ Standard type ☐ High capacity Ntoes2)
☐ Condensor trip device(CTD) ☐ Counter(C) ☐ ON/OFF button lock (BL) ☐ Miss insertion prevent device (MIP)
☐ Door interlock (DI) ☐ Door frame (DF) ☐ Key lock (KL)

☐ Lift Hook(LH, 630~ 1600AF:option, 2000~3200AF:standard attachment)

☐ UVTand UVT Controller(Undervoltage tripping device)
- ☐ Instantaneous type ☐ AC 110V ☐ AC 220V ☐ AC 380V ☐ AC 460V
- ☐ delay type ☐ AC 110V ☐ AC 220V ☐ AC 380V ☐ AC 460V

☐ Cell Switch(CL4, 4c) ☐ Cell switch(CL8, 8c) ☐ Shorting b-contact(SBC,5b)
☐ Miss insertion prevent device (MIP) ☐ Safety shutter lock (STL) ☐ Door interlock (DI)

ACB Cradle

Remark

Notes 1) The underdeveloped rating when
Notes 2) In case of motor charging(input)type, when charging type is standard (OFF Charging type) and high-capacity auxiliary contact is used, only 5a4b is possible.

Ordering sheet for ATS with ACBs

month date year

Reception	LG Industrial Systems			team		Esqr.	
Dispatch	Company name		Name		TEL.	FAX.	
Project			Delivery data		Delivery place		
Orderset Quantity	If rating is different in each set, please fill out other ordering sheet.						

Interlock Meathod	ACB Quantity	☐2 ☐3		
	Connection type	☐WIRE type -Wire length : ☐ Standard type(2000mm) ☐ Non-standard (apply for further datails)		
		☐Bar type -Bar length: ☐Standard type(800mm) ☐Non-standard (Request a special conference)		
	Interlock type	☐ Mechanical type ☐Mechanical and electrical type		
	Angle (W×H×D)	☐ Standard type(apply for further datails)(630~1600A : 600×1900×500mm / 2000~3200A : 800×1900×500mm) ☐ Non-standard (apply for further datails)		
Main substance of ACB		ACB_1	ACB_2 ☐same with ACB_1 ☐different from ACB_1	ACB_3 ☐same with ACB_1 ☐same with ACB_2 ☐different from ACB_1 and ACB_2
	Rated current	AF	AF	AF
	Trip relay	☐ No	☐ No	☐ No
		☐ Yes • Type ☐SPO ☐SGT ☐SGP ☐SPH ☐SGH ☐STH ☐LSO ☐LPO ☐LGT ☐LGP ☐LSH ☐LPH ☐LGH ☐LTH	☐ Yes • Type ☐SPO ☐SGT ☐SGP ☐SPH ☐SGH ☐STH ☐LSO ☐LPO ☐LGT ☐LGP ☐LSH ☐LPH ☐LGH ☐LTH	☐ Yes • Type ☐SPO ☐SGT ☐SGP ☐SPH ☐SGH ☐STH ☐LSO ☐LPO ☐LGT ☐LGP ☐LSH ☐LPH ☐LGH ☐LTH
	Number of pole	☐3 Poles type ☐4 Poles type	☐3 Poles type ☐4 Poles type	☐3 Poles type ☐4 Poles type
	Installation type	☐ Draw-out-type ☐ Fixed type	☐Draw-out-type ☐ Fixed type	☐ Draw-out-type ☐ Fixed type
	Disposal order of phase	☐ Standard type ☐ Reverse phase type	☐Standard type ☐ Reverse phase type	☐ Standard type ☐ Reverse phase type
	Input type	● Motor changing •Charging type ☐ Standard type(OFF Charging type) ☐ High speed (ON Charging type) • Operating power source of the motor(AC 220V)	● Motor changing •Charging type ☐ Standard type (OFF Charging type) ☐ High speed (ON Charging type) • Operating power source of the motor (AC 220V)	● Motor changing •Charging type ☐ Standard type (OFF Charging type) ☐High speed (ON Charging type) • Operating power source of the motor (AC 220V)
	Input power source	☐AC/DC 110V ☐AC/DC 220V	☐AC/DC 110V ☐AC/DC 220V	☐AC/DC 110V ☐AC/DC 220V
	Trip power source	☐AC/DC 110V ☐AC/DC 220V	☐AC/DC 110V ☐AC/DC 220V	☐AC/DC 110V ☐AC/DC 220V
Cradle	Cradle type	☐ Safety shutter non-attachment type ☐ Safety shutter attachment type	☐ Safety shutter non-attachment type ☐Safety shutter attachment type	☐ Safety shutter non-attachment type ☐ Safety shutter attachment type
	Bus-bar type	☐ Standard type(Horiontal) ☐ Nonstandard type(Vertical)	☐Standard type(Horiontal) ☐ Nonstandard type(Vertical)	☐ Standard type(Horiontal) ☐ Nonstandard type(Vertical)
Option accessories	Main body of ACB	● Auxiliary contact(5a5b) ☐ Standard type ☐ High capacity Notes1)	● Auxiliary contact(5a5b) ☐ Standard type ☐ High capacity Notes1)	● Auxiliary contact(5a5b) ☐ Standard type ☐ High capacity Notes1)
		☐ UVT and UVT Controller(Undervoltage tripping device) ☐ Instantaneous type ☐AC 110V ☐AC 380V ☐AC 220V ☐AC 460V ☐ dealy type ☐AC 110V ☐AC 380V ☐AC 220V ☐AC 460V	☐ UVT and UVT Controller(Undervoltage tripping device) ☐ Instantaneous type ☐AC 110V ☐AC 380V ☐AC 220V ☐AC 460V ☐ dealy type ☐AC 110V ☐AC 380V ☐AC 220V ☐AC 460V	☐ UVT and UVT Controller(Undervoltage tripping device) ☐ Instantaneous type ☐AC 110V ☐AC 380V ☐AC 220V ☐AC 460V ☐ dealy type ☐AC 110V ☐AC 380V ☐AC 220V ☐AC 460V
		☐ Condensor trip device(CTD)	☐Condensor trip device(CTD)	☐ Condensor trip device(CTD)
		☐ Counter(C)	☐Counter(C)	☐ Counter(C)
		☐ ON/OFF Botton lock (BL)	☐ON/OFF botton bock (BL)	☐ ON/OFF Botton lock (BL)
		☐ Miss insertion prevent device (MIP)	☐ Miss insertion prevent device (MIP)	☐ Miss insertion prevent device (MIP)
		☐ Door interlock (DI)	☐Door interlock (DI)	☐ Door interlock (DI)
		☐ Door frame (DF)	☐Door frame (DF)	☐ Door frame (DF)
		☐ Key lock (KL)	☐Key lock (KL)k	☐ Key lock (KL)
		☐ Lift hook(LH) -630~1600A:option, -2000~3200A: standard attachment	☐Lift hook(LH) -630~1600A:option, -2000~3200A: standard attachment	☐ Lift hook(LH) -630~1600A:option, -2000~3200A: standard attachment
	ACB Cradle	● Cell switch(CL) ☐CL4(4c) ☐CL8(8c)	●Cell switch (CL) ☐CL4(4c) ☐CL8(8c)	●Cell switch(CL) ☐CL4(4c) ☐CL8(8c)
		☐ Shorting b-contact(SBC, 5b)	☐ Shorting b-contact(SBC, 5b)	☐ Shorting b-contact(SBC, 5b)
		☐ Miss insertion prevent device(MIP)	☐Miss insertion prevent device(MIP)	☐ Miss insertion prevent device (MIP)
		☐ Safety shutter lock (STL)	☐Safety shutter lock (STL)	☐ Safety shutter lock (STL)
		☐ Door interlock (DI)	☐Door interlock (DI)	☐ Door interlock (DI)

Note) In case motor charging(input) type, when charging type is standard (OFF charging type) and high capacity auxiliary contact is used, only 5a4b is possible

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Ace-MEC(K)2000.1/2000.3 F/H